

(e) Test Methods and Procedures [40 CFR 264.1034]

1. Each owner or operator subject to the provisions of this paragraph shall comply with the test methods and procedures requirements provided in this subparagraph.
2. When a closed-vent system is tested for compliance with no detectable emissions, as required in part (d)12 of this paragraph, the test shall comply with the following requirements:
 - (i) Monitoring shall comply with Reference Method 21 in 40 CFR part 60.
 - (ii) The detection instrument shall meet the performance criteria of Reference Method 21.
 - (iii) The instrument shall be calibrated before use on each day of its use by the procedures specified in Reference Method 21.
 - (iv) Calibration gases shall be:
 - (I) Zero air (less than 10 ppm of hydrocarbon in air).
 - (II) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.
 - (v) The background level shall be determined as set forth in Reference Method 21.
 - (vi) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.
 - (vii) The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.
3. Performance tests to determine compliance with part (c)1 of this paragraph and with the total organic compound concentration limit of part (d)3 of this paragraph shall comply with the following:
 - (i) Performance tests to determine total organic compound concentrations and mass flow rates entering and exiting control devices shall be conducted and data reduced in accordance with the following reference methods and calculation procedures:
 - (I) Method 2 in 40 CFR part 60 for velocity and volumetric flow rate.
 - (II) Method 18 in 40 CFR part 60 for organic content.
 - (III) Each performance test shall consist of three separate runs; each run conducted for at least 1 hour under the conditions that exist when the hazardous waste management unit is operating at the highest load or capacity level reasonably expected to occur. For the purpose of determining total organic compound concentrations and mass flow rates, the average of results of all runs shall apply. The average shall be computed on a time-weighted basis.

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- (IV) Total organic mass flow rates shall be determined by the following equation:

$$E_h = Q_{sd} \left\{ \sum_{i=1}^n C_i MW_i \right\} [0.0416] [10^{-6}]$$

where:

E_h	=	Total organic mass flow rate, kg/h;
Q_{sd}	=	Volumetric flow rate of gases entering or exiting control device, as determined by Method 2, dscm/h;
n	=	Number of organic compounds in the vent gas;
C_i	=	Organic concentration in ppm, dry basis, of compound i in the vent gas, as determined by Method 18;
MW_i	=	Molecular weight of organic compound i in the vent gas, kg/kg-mol;
0.0416	=	Conversion factor for molar volume, kg-mol/m ³ (@ 293 K and 760 mm Hg);
10^{-6}	=	Conversion from ppm, ppm ⁻¹ .

- (V) The annual total organic emission rate shall be determined by the following equation:

$$E_A = (E_h)(H)$$

where:

E_A	=	Total organic mass emission rate, kg/y;
E_h	=	Total organic mass flow rate for the process vent, kg/h;
H	=	Total annual hours of operations for the affected unit, h.

- (VI) Total organic emissions from all affected process vents at the facility shall be determined by summing the hourly total organic mass emission rates (E_h as determined in item 3(i)(IV) of this subparagraph) and by summing the annual total organic mass emission rates (E_A , as determined in item 3(i)(V) of this subparagraph) for all affected process vents at the facility.

- (ii) The owner or operator shall record such process information as may be necessary to determine the conditions of the performance tests. Operations

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during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test.

- (iii) The owner or operator of an affected facility shall provide, or cause to be provided, performance testing facilities as follows:

- (I) Sampling ports adequate for the test methods specified in subpart 3(i) of this subparagraph.
- (II) Safe sampling platform(s).
- (III) Safe access to sampling platform(s).
- (IV) Utilities for sampling and testing equipment.

- (iv) For the purpose of making compliance determinations, the time-weighted average of the results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the owner or operator's control, compliance may, upon the Commissioner's approval, be determined using the average of the results of the two other runs.

4. To show that a process vent associated with a hazardous waste distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation is not subject to the requirements of this subpart, the owner or operator must make an initial determination that the time-weighted, annual average total organic concentration of the waste managed by the waste management unit is less than 10 ppmw using one of the following two methods:

- (i) Direct measurement of the organic concentration of the waste using the following procedures:

- (I) The owner or operator must take a minimum of four grab samples of waste for each waste stream managed in the affected unit under process conditions expected to cause the maximum waste organic concentration.
- (II) For waste generated onsite, the grab samples must be collected at a point before the waste is exposed to the atmosphere such as in an enclosed pipe or other closed system that is used to transfer the waste after generation to the first affected distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation. For waste generated offsite, the grab samples must be collected at the inlet to the first waste management unit that receives the waste provided the waste has been transferred to the facility in a closed system such as a tank truck and the waste is not diluted or mixed with other waste.
- (III) Each sample shall be analyzed and the total organic concentration of the sample shall be computed using Method 9060 or 8260 of SW-846. (See Rule 1200-1-11-.01(2)(b).)

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- (IV) The arithmetic mean of the results of the analyses of the four samples shall apply for each waste stream managed in the unit in determining the time-weighted, annual average total organic concentration of the waste. The time-weighted average is to be calculated using the annual quantity of each waste stream processed and the mean organic concentration of each waste stream managed in the unit.
 - (ii) Using knowledge of the waste to determine that its total organic concentration is less than 10 ppmw. Documentation of the waste determination is required. Examples of documentation that shall be used to support a determination under this provision include production process information documenting that no organic compounds are used, information that the waste is generated by a process that is identical to a process at the same or another facility that has previously been demonstrated by direct measurement to generate a waste stream having a total organic content less than 10 ppmw, or prior speciation analysis results on the same waste stream where it can also be documented that no process changes have occurred since that analysis that could affect the waste total organic concentration.
5. The determination that distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations manage hazardous wastes with time-weighted, annual average total organic concentrations less than 10 ppmw shall be made as follows:
- (i) By the effective date that the facility becomes subject to the provisions of this paragraph or by the date when the waste is first managed in a waste management unit, whichever is later, and
 - (ii) For continuously generated waste, annually, or
 - (iii) Whenever there is a change in the waste being managed or a change in the process that generates or treats the waste.
6. When an owner or operator and the Commissioner do not agree on whether a distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation manages a hazardous waste with organic concentrations of at least 10 ppmw based on knowledge of the waste, the procedures in Method 8260 of SW-846 (see Rule 1200-1-11-.01(2)(b)) may be used to resolve the dispute.
7. The Reference Methods cited in preceding parts of this subparagraph are applicable as those methods exist on the effective date of these regulations.
- (f) Recordkeeping Requirements [40 CFR 264.1035]
- 1.
 - (i) Each owner or operator subject to the provisions of this paragraph shall comply with the recordkeeping requirements of this subparagraph.
 - (ii) An owner or operator of more than one hazardous waste management unit subject to the provisions of this paragraph may comply with the recordkeeping requirements for these hazardous waste management units in one recordkeeping system if the system identifies each record by each hazardous waste management unit.

2. Owners and operators must record the following information in the facility operating record:
- (i) For facilities that comply with the provisions of subpart (d)1(ii) of this paragraph, an implementation schedule that includes dates by which the closed-vent system and control device will be installed and in operation. The schedule must also include a rationale of why the installation cannot be completed at an earlier date. The implementation schedule must be in the facility operating record by the effective date that the facility becomes subject to the provisions of this paragraph.
 - (ii) Up-to-date documentation of compliance with the process vent standards in subparagraph (c) of this paragraph, including:
 - (I) Information and data identifying all affected process vents, annual throughput and operating hours of each affected unit, estimated emission rates for each affected vent and for the overall facility (i.e., the total emissions for all affected vents at the facility), and the approximate location within the facility of each affected unit (e.g., identify the hazardous waste management units on a facility plot plan).
 - (II) Information and data supporting determinations of vent emissions and emission reductions achieved by add-on control devices based on engineering calculations or source tests. For the purpose of determining compliance, determinations of vent emissions and emission reductions must be made using operating parameter values (e.g., temperatures, flow rates, or vent stream organic compounds and concentrations) that represent the conditions that result in maximum organic emissions, such as when the waste management unit is operating at the highest load or capacity level reasonably expected to occur. If the owner or operator takes any action (e.g., managing a waste of different composition or increasing operating hours of affected waste management units) that would result in an increase in total organic emissions from affected process vents at the facility, then a new determination is required.
 - (iii) Where an owner or operator chooses to use test data to determine the organic removal efficiency or total organic compound concentration achieved by the control device, a performance test plan. The test plan must include:
 - (I) A description of how it is determined that the planned test is going to be conducted when the hazardous waste management unit is operating at the highest load or capacity level reasonably expected to occur. This shall include the estimated or design flow rate and organic content of each vent stream and define the acceptable operating ranges of key process and control device parameters during the test program.
 - (II) A detailed engineering description of the closed-vent system and control device including:
 - I. Manufacturer's name and model number of control device.
 - II. Type of control device.

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- III. Dimensions of the control device.
- IV. Capacity.
- V. Construction materials.
- (III) A detailed description of sampling and monitoring procedures, including sampling and monitoring locations in the system, the equipment to be used, sampling and monitoring frequency, and planned analytical procedures for sample analysis.
- (iv) Documentation of compliance with subparagraph (d) of this paragraph shall include the following information:
 - (I) A list of all information references and sources used in preparing the documentation.
 - (II) Records, including the dates, of each compliance test required by part (d)11 of this paragraph.
 - (III) If engineering calculations are used, a design analysis, specifications, drawings, schematics, and piping and instrumentation diagrams based on the appropriate sections of "APTI Course 415: Control of Gaseous Emissions" (see Rule 1200-1-11-.01(2)(b)) or other engineering texts acceptable to the Commissioner that present basic control device design information. Documentation provided by the control device manufacturer or vendor that describes the control device design in accordance with subitems I through VII of this item may be used to comply with this requirement. The design analysis shall address the vent stream characteristics and control device operation parameters as specified below.
 - I. For a thermal vapor incinerator, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also establish the design minimum and average temperature in the combustion zone and the combustion zone residence time.
 - II. For a catalytic vapor incinerator, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also establish the design minimum and average temperatures across the catalyst bed inlet and outlet.
 - III. For a boiler or process heater, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also establish the design minimum and average flame zone temperatures, combustion zone residence time, and description of method and location where the vent stream is introduced into the combustion zone.
 - IV. For a flare, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The

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design analysis shall also consider the requirements specified in part (d)4 of this paragraph.

- V. For a condenser, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity, and temperature. The design analysis shall also establish the design outlet organic compound concentration level, design average temperature of the condenser exhaust vent stream, and design average temperatures of the coolant fluid at the condenser inlet and outlet.
- VI. For a carbon adsorption system such as a fixed-bed adsorber that regenerates the carbon bed directly onsite in the control device, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity, and temperature. The design analysis shall also establish the design exhaust vent stream organic compound concentration level, number and capacity of carbon beds, type and working capacity of activated carbon used for carbon beds, design total steam flow over the period of each complete carbon bed regeneration cycle, duration of the carbon bed steaming and cooling/drying cycles, design carbon bed temperature after regeneration, design carbon bed regeneration time, and design service life of carbon.
- VII. For a carbon adsorption system such as a carbon canister that does not regenerate the carbon bed directly onsite in the control device, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity, and temperature. The design analysis shall also establish the design outlet organic concentration level, capacity of carbon bed, type and working capacity of activated carbon used for carbon bed, and design carbon replacement interval based on the total carbon working capacity of the control device and source operating schedule.
- (IV) A statement signed and dated by the owner or operator certifying that the operating parameters used in the design analysis reasonably represent the conditions that exist when the hazardous waste management unit is or would be operating at the highest load or capacity level reasonably expected to occur.
- (V) A statement signed and dated by the owner or operator certifying that the control device is designed to operate at an efficiency of 95 percent or greater unless the total organic concentration limit of part (c)1 of this paragraph is achieved at an efficiency less than 95 weight percent or the total organic emission limits of part (c)1 of this paragraph for affected process vents at the facility can be attained by a control device involving vapor recovery at an efficiency less than 95 weight percent. A statement provided by the control device manufacturer or vendor certifying that the control equipment meets the design specifications may be used to comply with this requirement.

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- (VI) If performance tests are used to demonstrate compliance, all test results.
3. Design documentation and monitoring, operating, and inspection information for each closed-vent system and control device required to comply with the provisions of this Rule shall be recorded and kept up-to-date in the facility operating record. The information shall include:
- (i) Description and date of each modification that is made to the closed-vent system or control device design.
 - (ii) Identification of operating parameter, description of monitoring device, and diagram of monitoring sensor location or locations used to comply with subparts (d)6(i) and (ii) of this paragraph.
 - (iii) Monitoring, operating, and inspection information required by parts (d)6 through 11 of this paragraph.
 - (iv) Date, time, and duration of each period that occurs while the control device is operating when any monitored parameter exceeds the value established in the control device design analysis as specified below:
 - (I) For a thermal vapor incinerator designed to operate with a minimum residence time of 0.50 second at a minimum temperature of 760 °C. period when the combustion temperature is below 760 °C.
 - (II) For a thermal vapor incinerator designed to operate with an organic emission reduction efficiency of 95 weight percent or greater period when the combustion zone temperature is more than 28 °C below the design average combustion zone temperature established as a requirement of subitem 2(iv)(III)I of this subparagraph.
 - (III) For a catalytic vapor incinerator, period when:
 - I. Temperature of the vent stream at the catalyst bed inlet is more than 28 °C below the average temperature of the inlet vent stream established as a requirement of subitem 2(iv)(III)II of this subparagraph, or
 - II. Temperature difference across the catalyst bed is less than 80 percent of the design average temperature difference established as a requirement of subitem 2(iv)(III)II of this subparagraph.
 - (IV) For a boiler or process heater, period when:
 - I. Flame zone temperature is more than 28 °C below the design average flame zone temperature established as a requirement of subitem 2(iv)(III)III of this subparagraph, or
 - II. Position changes where the vent stream is introduced to the combustion zone from the location established as a requirement of subitem 2(iv)(III)III of this subparagraph.

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- (V) For a flare, period when the pilot flame is not ignited.
- (VI) For a condenser that complies with subitem (d)6(ii)(VI)I of this paragraph, period when the organic compound concentration level or readings of organic compounds in the exhaust vent stream from the condenser are more than 20 percent greater than the design outlet organic compound concentration level established as a requirement of subitem 2(iv)(III)V of this subparagraph.
- (VII) For a condenser that complies with subitem (d)6(ii)(VI)I of this paragraph, period when:
 - I. Temperature of the exhaust vent stream from the condenser is more than 6 °C above the design average exhaust vent stream temperature established as a requirement of subitem 2(iv)(III)V of this subparagraph; or
 - II. Temperature of the coolant fluid exiting the condenser is more than 6 °C above the design average coolant fluid temperature at the condenser outlet established as a requirement of subitems 2(iv)(III)V of this subparagraph.
- (VIII) For a carbon adsorption system such as a fixed-bed carbon adsorber that regenerates the carbon bed directly onsite in the control device and complies with subitem (d)6(ii)(VII)I of this paragraph, period when the organic compound concentration level or readings of organic compounds in the exhaust vent stream from the carbon bed are more than 20 percent greater than the design exhaust vent stream organic compound concentration level established as a requirement of subitem 2(iv)(III)VI of this subparagraph.
- (IX) For a carbon adsorption system such as a fixed-bed carbon adsorber that regenerates the carbon bed directly onsite in the control device and complies with subitem (d)6(iv)(VII)II of this paragraph, period when the vent stream continues to flow through the control device beyond the predetermined carbon bed regeneration time established as a requirement of subitem 2(iv)(III)VI of this subparagraph.
- (v) Explanation for each period recorded under subpart (iv) of this part of the cause for control device operating parameter exceeding the design value and the measures implemented to correct the control device operation.
- (vi) For a carbon adsorption system operated subject to requirements specified in part (d)7 or subpart (d)8(ii) of this paragraph, date when existing carbon in the control device is replaced with fresh carbon.
- (vii) For a carbon adsorption system operated subject to requirements specified in subpart (d)8(i) of this paragraph, a log that records:
 - (I) Date and time when control device is monitored for carbon breakthrough and the monitoring device reading.
 - (II) Date when existing carbon in the control device is replaced with fresh carbon.

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- (viii) Date of each control device startup and shutdown.
 - (ix) An owner or operator designating any components of a closed-vent system as unsafe to monitor pursuant to part (d)15 of this paragraph shall record in a log that is kept in the facility operating record the identification of closed-vent system components that are designated as unsafe to monitor in accordance with the requirements of part (d)15 of this paragraph, an explanation for each closed-vent system component stating why the closed-vent system component is unsafe to monitor, and the plan for monitoring each closed-vent system component.
 - (x) When each leak is detected as specified in part (d)12 of this paragraph, the following information shall be recorded:
 - (I) The instrument identification number, the closed-vent system component identification number, and the operator name, initials, or identification number.
 - (II) The date the leak was detected and the date of first attempt to repair the leak.
 - (III) The date of successful repair of the leak.
 - (IV) Maximum instrument reading measured by Method 21 of 40 CFR part 60, appendix A after it is successfully repaired or determined to be nonreparable.
 - (V) ``Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.
 - I. The owner or operator may develop a written procedure that identifies the conditions that justify a delay of repair. In such cases, reasons for delay of repair may be documented by citing the relevant sections of the written procedure.
 - II. If delay of repair was caused by depletion of stocked parts, there must be documentation that the spare parts were sufficiently stocked on-site before depletion and the reason for depletion.
- 4. Records of the monitoring, operating, and inspection information required by subparts 3(iii)-3(x) of this subparagraph shall be maintained by the owner or operator for at least 3 years following the date of each occurrence, measurement, maintenance, corrective action, or record.
 - 5. For a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system, the Commissioner will specify the appropriate recordkeeping requirements.
 - 6. Up-to-date information and data used to determine whether or not a process vent is subject to the requirements in subparagraph (c) of this paragraph including supporting documentation as required by subpart (e)4(ii) of this paragraph when application of the knowledge of the nature of the hazardous waste stream or the process by which it was produced is used, shall be recorded in a log that is kept in the facility operating record.

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(g) Reporting Requirements [40 CFR 264.1036]

1. A semiannual report shall be submitted by owners and operators subject to the requirements of this paragraph to the Division Director by dates specified by the Commissioner. The report shall include the following information:
 - (i) The Environmental Protection Agency identification number, name, and address of the facility.
 - (ii) For each month during the semiannual reporting period, dates when the control device exceeded or operated outside of the design specifications as defined in subpart (f)3(iv) of this paragraph and as indicated by the control device monitoring required by part (d)6 of this paragraph and such exceedances were not corrected within 24 hours, or that a flare operated with visible emissions as defined in part (d)4 of this paragraph and as determined by Method 22 monitoring, the duration and cause of each exceedance or visible emissions, and any corrective measures taken.
2. If, during the semiannual reporting period, the control device does not exceed or operate outside of the design specifications as defined in subpart (f)3(iv) of this paragraph for more than 24 hours or a flare does not operate with visible emissions as defined in part (d)4 of this paragraph, a report to the Division Director is not required.
3. The Reference Methods cited in preceding parts of this subparagraph are applicable as those methods exist on the effective date of these regulations.

(h)-(t) (RESERVED) [40 CFR 264.1037-264.1049]

(31) Air Emission Standards for Equipment Leaks [40 CFR 264 Subpart BB]

(a) Applicability [40 CFR 264.1050]

1. The regulations in this subpart apply to owners and operators of facilities that treat, store, or dispose of hazardous wastes (except as provided in subparagraphs (1)(b) of this Rule).
2. Except as provided in part (o)11 of this paragraph, this paragraph applies to equipment that contains or contacts hazardous wastes with organic concentrations of at least 10 percent by weight that are managed in one of the following:
 - (i) A unit that is subject to the permitting requirements of Rule 1200-1-11-.07, or
 - (ii) A unit (including a hazardous waste recycling unit) that is not exempt from permitting under the provisions of Rule 1200-1-11-.03(4)(e)2 (i.e., a hazardous waste recycling unit that is not a “90-day” tank or container) and that is located at a hazardous waste management facility otherwise subject to the permitting requirements of Rule 1200-1-11-.07, or
 - (iii) A unit that is exempt from permitting under the provisions of Rule 1200-1-11-.03(4)(e)2 (i.e., a “90-day” tank or container) and is not a recycling unit under the provisions of Rule 1200-1-11-.02(1)(f).
3. For the owner or operator of a facility subject to this paragraph and who received a final permit under RCRA section 3005 and/or T.C.A. §68-212-108 prior to December 6, 1996,

the requirements of this paragraph shall be incorporated into the permit when the permit is reissued in accordance with the requirements of Rule 1200-1-11-.07(7)(i) or reviewed in accordance with the requirements of Rule 1200-1-11-.07(8)(c)4. Until such date when the owner or operator receives a final permit incorporating the requirements of this paragraph, the owner and operator is subject to the requirements of Rule 1200-1-11-.05(28).

4. Each piece of equipment to which this paragraph applies shall be marked in such a manner that it can be distinguished readily from other pieces of equipment.
5. Equipment that is in vacuum service is excluded from the requirements of subparagraph (c) to (k) of this paragraph if it is identified as required in subpart (o)7(v) of this paragraph.
6. Equipment that contains or contacts hazardous waste with an organic concentration of at least 10 percent by weight for less than 300 hours per calendar year is excluded from the requirements of subparagraphs (c) through (k) of this paragraph if it is identified, as required in subpart (o)7(vi) of this paragraph.
7. Purged coatings and solvents from surface coating operations subject to the national emission standards for hazardous air pollutants (NESHAP) for the surface coating of automobiles and light-duty trucks at 40 CFR part 63, subpart IIII, are not subject to the requirements of this Rule.

(Note: The requirements of subparagraphs (c) through (p) of this paragraph apply to equipment associated with hazardous waste recycling units previously exempt under Rule 1200-1-11-.02(1)(f)3(i). Other exemptions under Rules 1200-1-11-.02(1)(d), and .06(1)(b)7 are not affected by these requirements.)

(b) Definitions [40 CFR 264.1051]

As used in this paragraph, all terms shall have the meaning given them in Rule 1200-1-11-.06(30)(b), Tennessee Code Annotated §§68-212-101 et seq. and Rules 1200-1-11-.01 through .06 and .09.

(c) Standards: Pumps in Light Liquid Service [40 CFR 264.1052]

1.
 - (i) Each pump in light liquid service shall be monitored monthly to detect leaks by the methods specified in part (n)2 of this paragraph, except as provided in parts 4, 5, and 6 of this subparagraph.
 - (ii) Each pump in light liquid service shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.
2.
 - (i) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.
 - (ii) If there are indications of liquids dripping from the pump seal, a leak is detected.
3.
 - (i) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in subparagraph (j) of this paragraph.

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- (ii) A first attempt at repair (e.g., tightening the packing gland) shall be made no later than 5 calendar days after each leak is detected.
- 4. Each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of part 1 of this subparagraph, provided the following requirements are met:
 - (i) Each dual mechanical seal system must be:
 - (I) Operated with the barrier fluid at a pressure that is at all times greater than the pump stuffing box pressure, or
 - (II) Equipped with a barrier fluid degassing reservoir that is connected by a closed-vent system to a control device that complies with the requirements of subparagraph (k) of this paragraph, or
 - (III) Equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emissions to the atmosphere.
 - (ii) The barrier fluid system must not be a hazardous waste with organic concentrations 10 percent or greater by weight.
 - (iii) Each barrier fluid system must be equipped with a sensor that will detect failure of the seal system, the barrier fluid system, or both.
 - (iv) Each pump must be checked by visual inspection, each calendar week, for indications of liquids dripping from the pump seals.
 - (v)
 - (I) Each sensor as described in subpart 4(iii) of this subparagraph must be checked daily or be equipped with an audible alarm that must be checked monthly to ensure that it is functioning properly.
 - (II) The owner or operator must determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.
 - (vi)
 - (I) If there are indications of liquids dripping from the pump seal or the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined in item (v)(II) of this part, a leak is detected.
 - (II) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in subparagraph (j) of this paragraph.
 - (III) A first attempt at repair (e.g., relapping the seal) shall be made no later than 5 calendar days after each leak is detected.
- 5. Any pump that is designated, as described in subpart (o)7(ii) of this paragraph, for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of parts 1,3 and 4 of this paragraph if the pump meets the following requirements:
 - (i) Must have no externally actuated shaft penetrating the pump housing.

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- (ii) Must operate with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background as measured by the methods specified in part (n)3 of this paragraph.
 - (iii) Must be tested for compliance with subpart (ii) of this part initially upon designation, annually, and at other times as requested by the Commissioner.
 - 6. If any pump is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal or seals to a control device that complies with the requirements of subparagraph (k) of this paragraph, it is exempt from the requirements of parts 1 through 5 of this subparagraph.
- (d) Standards: Compressors [40 CFR 264.1053]
- 1. Each compressor shall be equipped with a seal system that includes a barrier fluid system and that prevents leakage of total organic emissions to the atmosphere, except as provided in parts 8 and 9 of this subparagraph.
 - 2. Each compressor seal system as required in part 1 of this subparagraph shall be:
 - (i) Operated with the barrier fluid at a pressure that is at all times greater than the compressor stuffing box pressure, or
 - (ii) Equipped with a barrier fluid system that is connected by a closed-vent system to a control device that complies with the requirements of subparagraph (k) of this paragraph, or
 - (iii) Equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emissions to atmosphere.
 - 3. The barrier fluid must not be a hazardous waste with organic concentrations 10 percent or greater by weight.
 - 4. Each barrier fluid system as described in parts 1 through 3 of this subparagraph shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.
 - 5.
 - (i) Each sensor as required in part 4 of this subparagraph shall be checked daily or shall be equipped with an audible alarm that must be checked monthly to ensure that it is functioning properly unless the compressor is located within the boundary of an unmanned plant site, in which case the sensor must be checked daily.
 - (ii) The owner or operator shall determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.
 - 6. If the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined under subpart 5(ii) of this subparagraph, a leak is detected.
 - 7.
 - (i) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in subparagraph (j) of this paragraph.

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- (ii) A first attempt at repair (e.g., tightening the packing gland) shall be made no later than 5 calendar days after each leak is detected.
- 8. A compressor is exempt from the requirements of parts 1 and 2 of this subparagraph if it is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal to a control device that complies with the requirements of subparagraph (k) of this paragraph, except as provided in part 9 of this subparagraph.
- 9. Any compressor that is designated, as described in subpart (o)7(ii) of this paragraph for no detectable emissions as indicated by an instrument reading of less than 500 ppm above background is exempt from the requirements of parts 1 through 8 of this subparagraph if the compressor:
 - (i) Is determined to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in part (n)3 of this paragraph.
 - (ii) Is tested for compliance with subpart 9(i) of this subparagraph initially upon designation, annually, and at other times as requested by the Commissioner.
- (e) Standards: Pressure Relief Devices in Gas/Vapor Service [40 CFR 264.1054]
 - 1. Except during pressure releases, each pressure relief device in gas/vapor service shall be operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in part (n)3 of this paragraph.
 - 2.
 - (i) After each pressure release, the pressure relief device shall be returned to a condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as soon as practicable, but no later than 5 calendar days after each pressure release, except as provided in subparagraph (j) of this paragraph.
 - (ii) No later than 5 calendar days after the pressure release, the pressure relief device shall be monitored to confirm the condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in part (n)3 of this paragraph.
 - 3. Any pressure relief device that is equipped with a closed-vent system capable of capturing and transporting leakage from the pressure relief device to a control device as described in subparagraph (k) of this paragraph is exempt from the requirements of parts 1 and 2 of this subparagraph.
- (f) Standards: Sampling Connecting Systems [40 CFR 264.1055]
 - 1. Each sampling connection system shall be equipped with a closed-purge, closed-loop, or closed-vent system. This system shall collect the sample purge for return to the process or for routing to the appropriate treatment system. Gases displaced during filling of the sample container are not required to be collected or captured.
 - 2. Each closed-purge, closed-loop, or closed-vent system as required in part 1 of this subparagraph shall meet one of the following requirements:

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- (i) Return the purged process fluid directly to the process line;
 - (ii) Collect and recycle the purged process fluid; or
 - (iii) Be designed and operated to capture and transport all the purged process fluid to a waste management unit that complies with the applicable requirements of subparagraphs (32)(e) through (32)(g) of this Rule or a control device that complies with the requirements of subparagraph (k) of this paragraph.
 - 3. In-situ sampling systems and sampling systems without purges are exempt from the requirements of parts 1 and 2 of this subparagraph.
- (g) Standards: Open-ended Valves or Lines [40 CFR 264.1056]
- 1.
 - (i) Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve.
 - (ii) The cap, blind flange, plug, or second valve shall seal the open end at all times except during operations requiring hazardous waste stream flow through the open-ended valve or line.
 - 2. Each open-ended valve or line equipped with a second valve shall be operated in a manner such that the valve on the hazardous waste stream end is closed before the second valve is closed.
 - 3. When a double block and bleed system is being used, the bleed valve or line may remain open during operations that require venting the line between the block valves but shall comply with part 1 of this subparagraph at all other times.
- (h) Standards: Valves in Gas/Vapor Service or in Light Liquid Service [40 CFR 264.1057]
- 1. Each valve in gas/vapor or light liquid service shall be monitored monthly to detect leaks by the methods specified in part (n)2 of this paragraph and shall comply with parts 2 through 5 of this subparagraph, except as provided in parts 6, 7, and 8 of this subparagraph, and subparagraphs (l) and (m) of this paragraph.
 - 2. If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.
 - 3.
 - (i) Any valve for which a leak is not detected for two successive months may be monitored the first month of every succeeding quarter, beginning with the next quarter, until a leak is detected.
 - (ii) If a leak is detected, the valve shall be monitored monthly until a leak is not detected for two successive months,
 - 4.
 - (i) When a leak is detected, it shall be repaired as soon as practicable, but no later than 15 calendar days after the leak is detected, except as provided in subparagraph (j) of this paragraph.
 - (ii) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
 - 5. First attempts at repair include, but are not limited to, the following best practices where practicable:

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- (i) Tightening of bonnet bolts.
 - (ii) Replacement of bonnet bolts.
 - (iii) Tightening of packing gland nuts.
 - (iv) Injection of lubricant into lubricated packing.
- 6. Any valve that is designated, as described in subpart (o)7(ii) of this paragraph, for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of part 1 of this subparagraph if the valve:
 - (i) Has no external actuating mechanism in contact with the hazardous waste stream.
 - (ii) Is operated with emissions less than 500 ppm above background as determined by the method specified in part (n)3 of this paragraph.
 - (iii) Is tested for compliance with subpart 6(ii) of this subparagraph initially upon designation, annually, and at other times as requested by the Commissioner.
- 7. Any valve that is designated, as described in subpart (o)8(i) of this paragraph as an unsafe-to-monitor valve is exempt from the requirements of part 1 of this subparagraph if:
 - (i) The owner or operator of the valve determines that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with part 1 of this subparagraph.
 - (ii) The owner or operator of the valve adheres to a written plan that requires monitoring of the valve as frequently as practicable during safe-to-monitor times.
- 8. Any valve that is designated, as described in subpart (o)8(ii) of this paragraph, as a difficult-to-monitor valve is exempt from the requirements of part 1 of this subparagraph if:
 - (i) The owner or operator of the valve determines that the valve cannot be monitored without elevating the monitoring personnel more than 2 meters above a support surface.
 - (ii) The hazardous waste management unit within which the valve is located was in operation before June 21, 1990.
 - (iii) The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.
- (i) Standards: Pumps and Valves in Heavy Liquid Service, Pressure Relief Devices in Light Liquid or Heavy Liquid Service, and Flanges and Other Connectors [40 CFR 264.1058]
 - 1. Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and flanges and other connectors shall be monitored within 5 days by the

method specified in part (n)2 of this paragraph if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method.

2. If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.
3.
 - (i) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected. except as provided in subparagraph (j) of this paragraph.
 - (ii) The first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
4. First attempts at repair include, but are not limited to, the best practices described under part (h)5 of this paragraph.
5. Any connector that is inaccessible or is ceramic or ceramic-lined (e.g., porcelain, glass, or glass-lined) is exempt from the monitoring requirements of part 1 of this subparagraph and from the recordkeeping requirements of subparagraph (o) of this paragraph.

(j) Standards: Delay of Repair [40 CFR 264.1059]

1. Delay of repair of equipment for which leaks have been detected will be allowed if the repair is technically infeasible without a hazardous waste management unit shutdown. In such a case, repair of this equipment shall occur before the end of the next hazardous waste management unit shutdown.
2. Delay of repair of equipment for which leaks have been detected will be allowed for equipment that is isolated from the hazardous waste management unit and that does not continue to contain or contact hazardous waste with organic concentrations at least 10 percent by weight.
3. Delay of repair for valves will be allowed if:
 - (i) The owner or operator determines that emissions of purged material resulting from immediate repair are greater than the emissions likely to result from delay of repair.
 - (ii) When repair procedures are effected, the purged material is collected and destroyed or recovered in a control device complying with subparagraph (k) of this paragraph.
4. Delay of repair for pumps will be allowed if:
 - (i) Repair requires the use of a dual mechanical seal system that includes a barrier fluid system.
 - (ii) Repair is completed as soon as practicable, but not later than 6 months after the leak was detected.
5. Delay of repair beyond a hazardous waste management unit shutdown will be allowed for a valve if valve assembly replacement is necessary during the hazardous waste management unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the next hazardous waste management unit shutdown will not be

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allowed unless the next hazardous waste management unit shutdown occurs sooner than 6 months after the first hazardous waste management unit shutdown.

- (k) Standards: Closed-vent Systems and Control Devices [40 CFR 264.1060]
1. Owners and operators of closed-vent systems and control devices subject to this paragraph shall comply with the provisions of subparagraph (30)(d) of this Rule.
 2.
 - (i) The owner or operator of an existing facility who cannot install a closed-vent system and control device to comply with the provisions of this paragraph on the effective date that the facility becomes subject to the provisions of this paragraph must prepare an implementation schedule that includes dates by which the closed-vent system and control device will be installed and in operation. The controls must be installed as soon as possible, but the implementation schedule may allow up to 30 months after the effective date that the facility becomes subject to this paragraph for installation and startup.
 - (ii) Any unit that begins operation after December 21, 1990, and is subject to the provisions of this paragraph when operation begins, must comply with the rules immediately (i.e., must have control devices installed and operating on startup of the affected unit); the 30-month implementation schedule does not apply.
 - (iii) The owner or operator of any facility in existence on the effective date of a statutory or regulatory amendment that renders the facility subject to this paragraph shall comply with all requirements of this paragraph as soon as practicable but no later than 30 months after the amendment's effective date. When control equipment required by this paragraph can not be installed and begin operation by the effective date of the amendment, the facility owner or operator shall prepare an implementation schedule that includes the following information: Specific calendar dates for award or contracts or issuance of purchase orders for the control equipment, initiation of on-site installation of the control equipment, completion of the control equipment installation, and performance of any testing to demonstrate that the installed equipment meets the applicable standards of this paragraph. The owner or operator shall enter the implementation schedule in the operating record or in a permanent, readily available file located at the facility.
 - (iv) Owners and operators of facilities and units that become newly subject to the requirements of this paragraph after December 8, 1997, due to an action other than those described in subpart 2(iii) of this subparagraph must comply with all applicable requirements immediately (i.e., must have control devices installed and operating on the date the facility or unit becomes subject to this paragraph; the 30-month implementation schedule does not apply).
- (l) Alternative Standards for Valves in Gas/Vapor Service or in Light Liquid Service: Percentage of Valves Allowed to Leak [40 CFR 264.1061]
1. An owner or operator subject to the requirements of subparagraph (h) of this paragraph may elect to have all valves within a hazardous waste management unit comply with an alternative standard that allows no greater than 2 percent of the valves to leak.

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2. The following requirements shall be met if an owner or operator decides to comply with the alternative standard of allowing 2 percent of valves to leak:
 - (i) An owner or operator must notify the Division Director that the owner or operator has elected to comply with the requirements of this subparagraph.
 - (ii) A performance test as specified in part 3 of this subparagraph shall be conducted initially upon designation, annually, and at other times requested by the Commissioner.
 - (iii) If a valve leak is detected, it shall be repaired in accordance with parts (h)4 and 5 of this paragraph.
 3. Performance tests shall be conducted in the following manner:
 - (i) All valves subject to the requirements in subparagraph (h) of this paragraph within the hazardous waste management unit shall be monitored within 1 week by the methods specified in part (n)2 of this paragraph.
 - (ii) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.
 - (iii) The leak percentage shall be determined by dividing the number of valves subject to the requirements in subparagraph (h) of this paragraph for which leaks are detected by the total number of valves subject to the requirements in subparagraph (h) of this paragraph within the hazardous waste management unit.
 4. If an owner or operator decides to comply with this section no longer, the owner or operator must notify the Division Director in writing that the work practice standard described in parts (h)1 through 5 of this paragraph will be followed.
- (m) Alternative Standards for Valves in Gas/Vapor Service or in Light Liquid Service: Skip Period Leak Detection and Repair [40 CFR 264.1062]
1.
 - (i) An owner or operator subject to the requirements of subparagraph (h) of this paragraph may elect for all valves within a hazardous waste management unit to comply with one of the alternative work practices specified in subparts 2(ii) and (iii) of this subparagraph.
 - (ii) An owner or operator must notify the Division Director before implementing one of the alternative work practices.
 2.
 - (i) An owner or operator shall comply with the requirements for valves, as described in subparagraph (h) of this paragraph, except as described in subparts (ii) and (iii) of this part.
 - (ii) After two consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2 percent, an owner or operator may begin to skip one of the quarterly leak detection periods (i.e., monitor for leaks once every six months) for the valves subject to the requirements in subparagraph (h) of this paragraph.

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- (iii) After five consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2 percent, an owner or operator may begin to skip three of the quarterly leak detection periods (i.e., monitor for leaks once every year) for the valves subject to the requirements in subparagraph (h) of this paragraph.
 - (iv) If the percentage of valves leaking is greater than 2 percent, the owner or operator shall monitor monthly in compliance with the requirements in subparagraph (h) of this paragraph, but may again elect to use this subparagraph after meeting the requirements of subpart (h)3(i) of this paragraph.
- (n) Test Methods and Procedures [40 CFR 264.1063]
 - 1. Each owner or operator subject to the provisions of this paragraph shall comply with the test methods and procedures requirements provided in this subparagraph.
 - 2. Leak detection monitoring, as required in subparagraph (c) through (m) of this paragraph, shall comply with the following requirements:
 - (i) Monitoring shall comply with Reference Method 21 in 40 CFR part 60.
 - (ii) The detection instrument shall meet the performance criteria of Reference Method 21.
 - (iii) The instrument shall be calibrated before use on each day of its use by the procedures specified in Reference Method 21.
 - (iv) Calibration gases shall be:
 - (I) Zero air (less than 10 ppm of hydrocarbon in air).
 - (II) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.
 - (v) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.
 - 3. When equipment is tested for compliance with no detectable emissions, as required in part (c)5, part (d)9, subparagraph (e) and part (h)6 of this paragraph, the test shall comply with the following requirements:
 - (i) The requirements of subparts 2(i) through (iv) of this subparagraph shall apply.
 - (ii) The background level shall be determined as set forth in Reference Method 21.
 - (ii) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.
 - (iv) The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.
 - 4. In accordance with the waste analysis plan required by part (2)(d)2 of this Rule, an owner or operator of a facility must determine, for each piece of equipment, whether the

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equipment contains or contacts a hazardous waste with organic concentration that equals or exceeds 10 percent by weight using the following:

- (i) Methods described in ASTM Methods D 2267-88, E 169-87, E 168-88, E 260-85 (See Rule 1200-1-11-.01(2)(b));
 - (ii) Method 9060 or 8260 of SW-846 (see Rule 1200-1-11-.01(2)(b)); or
 - (iii) Application of the knowledge of the nature of the hazardous waste stream or the process by which it was produced. Documentation of a waste determination by knowledge is required. Examples of documentation that shall be used to support a determination under this provision include production process information documenting that no organic compounds are used, information that the waste is generated by a process that is identical to a process at the same or another facility that has previously been demonstrated by direct measurement to have a total organic content less than 10 percent, or prior speciation analysis results on the same waste stream where it can also be documented that no process changes have occurred since that analysis that could affect the waste total organic concentration.
5. If an owner or operator determines that a piece of equipment contains or contacts a hazardous waste with organic concentrations at least 10 percent by weight, the determination can be revised only after following the procedures in subparts 4(i) or (ii) of this subparagraph.
6. When an owner or operator and the Regional Administrator do not agree on whether a piece of equipment contains or contacts a hazardous waste with organic concentrations at least 10 percent by weight, the procedures in subparts 4(i) or (ii) of this subparagraph can be used to resolve the dispute.
7. Samples used in determining the percent organic content shall be representative of the highest total organic content hazardous waste that is expected to be contained in or contact the equipment.
8. To determine if pumps or valves are in light liquid service, the vapor pressures of constituents may be obtained from standard reference texts or may be determined by ASTM D-2879-86 (see Rule 1200-1-11-.01(2)(b)).
9. Performance tests to determine if a control device achieves 95 weight percent organic emission reduction shall comply with the procedures of subparts (30)(e)3(i) through (iv) of this Rule.
10. The Reference Methods cited in preceding parts of this subparagraph are applicable as those methods exist on the effective date of these regulations.
- (o) Recordkeeping Requirements [40 CFR 264.1064]
- 1. (i) Each owner or operator subject to the provisions of this paragraph shall comply with the recordkeeping requirements of this subparagraph.
 - (ii) An owner or operator of more than one hazardous waste management unit subject to the provisions of this paragraph may comply with the recordkeeping requirements for these hazardous waste management units in one recordkeeping

system if the system identifies each record by each hazardous waste management unit.

2. Owners and operators must record the following information in the facility operating record:
 - (i) For each piece of equipment to which paragraph (31) of this Rule applies:
 - (I) Equipment identification number and hazardous waste management unit identification.
 - (II) Approximate locations within the facility (e.g., identify the hazardous waste management unit on a facility plot plan).
 - (III) Type of equipment (e.g., a pump or pipeline valve).
 - (IV) Percent-by-weight total organics in the hazardous waste stream at the equipment.
 - (V) Hazardous waste state at the equipment (e.g., gas/vapor or liquid).
 - (VI) Method of compliance with the standard (e.g., "monthly leak detection and repair" or "equipped with dual mechanical seals").
 - (ii) For facilities that comply with the provisions of subpart (30)(d)1(ii) of this Rule, an implementation schedule as specified in subpart (30)(d)1(ii) of this Rule.
 - (iii) Where an owner or operator chooses to use test data to demonstrate the organic removal efficiency or total organic compound concentration achieved by the control device, a performance test plan as specified in subpart (30)(f)2(iii) of this Rule.
 - (iv) Documentation of compliance with subparagraph (k) of this paragraph, including the detailed design documentation or performance test results specified in subpart (30)(f)2(iv) of this Rule.
3. When each leak is detected as specified in subparagraphs (c), (d), (h) and (i) of this paragraph, the following requirements apply:
 - (i) A weatherproof and readily visible identification, marked with the equipment identification number, the date evidence of a potential leak was found in accordance with part (i)1 of this paragraph, and the date the leak was detected, shall be attached to the leaking equipment.
 - (ii) The identification on equipment, except on a valve, may be removed after it has been repaired.
 - (iii) The identification on a valve may be removed after it has been monitored for 2 successive months as specified in part (h)3 of this paragraph and no leak has been detected during those 2 months.
4. When each leak is detected as specified in subparagraphs (c), (d), (h) and (i) of this paragraph, the following information shall be recorded in an inspection log and shall be kept in the facility operating record:

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- (i) The instrument and operator identification numbers and the equipment identification number.
 - (ii) The date evidence of a potential leak was found in accordance with part (i)1 of this paragraph.
 - (iii) The date the leak was detected and the dates of each attempt to repair the leak.
 - (iv) Repair methods applied in each attempt to repair the leak.
 - (v) "Above 10,000" if the maximum instrument reading measured by the methods specified in part (n)2 of this paragraph after each repair attempt is equal to or greater than 10,000 ppm.
 - (vi) "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.
 - (vii) Documentation supporting the delay of repair of a valve in compliance with part (j)3 of this paragraph.
 - (viii) The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a hazardous waste management unit shutdown.
 - (ix) The expected date of successful repair of the leak if a leak is not repaired within 15 calendar days.
 - (x) The date of successful repair of the leak.
5. Design documentation and monitoring, operating, and inspection information for each closed-vent system and control device required to comply with the provisions of subparagraph (k) of this paragraph shall be recorded and kept up-to-date in the facility operating record as specified in part (30)(f)3 of this Rule. Design documentation is specified in subparts (30)(f)3(i) and (ii) of this Rule and monitoring, operating, and inspection information in subparts (30)(f)3(iii) through (viii) of this Rule.
6. For a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system, the Commissioner will specify the appropriate recordkeeping requirements.
7. The following information pertaining to all equipment subject to the requirements in subparagraphs (c) through (k) of this paragraph shall be recorded in a log that is kept in the facility operating record:
- (i) A list of identification numbers for equipment (except welded fittings) subject to the requirements of this paragraph.
 - (ii) (I) A list of identification numbers for equipment that the owner or operator elects to designate for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, under the provisions of parts (c)5, (d)9 and (h)6 of this paragraph.

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- (II) The designation of this equipment as subject to the requirements of parts (c)5, (d)9 and (h)6 of this paragraph shall be signed by the owner or operator.
 - (iii) A list of equipment identification numbers for pressure relief devices required to comply with part (e)1 of this paragraph.
 - (iv)
 - (I) The dates of each compliance test required in part (c)5, part (d)9, subparagraph (e) and part (h)6 of this paragraph.
 - (II) The background level measured during each compliance test.
 - (III) The maximum instrument reading measured at the equipment during each compliance test.
 - (v) A list of identification numbers for equipment in vacuum service.
 - (vi) Identification, either by list or location (area or group) of equipment that contains or contacts hazardous waste with an organic concentration of at least 10 percent by weight for less than 300 hours per calendar year.
8. The following information pertaining to all valves subject to the requirements of parts (h)7 and 8 of this paragraph shall be recorded in a log that is kept in the facility operating record:
- (i) A list of identification numbers for valves that are designated as unsafe to monitor, an explanation for each valve stating why the valve is unsafe to monitor, and the plan for monitoring each valve.
 - (ii) A list of identification numbers for valves that are designated as difficult to monitor, an explanation for each valve stating why the valve is difficult to monitor, and the planned schedule for monitoring each valve.
9. The following information shall be recorded in the facility operating record for valves complying with subparagraph (m) of this paragraph:
- (i) A schedule of monitoring.
 - (ii) The percent of valves found leaking during each monitoring period.
10. The following information shall be recorded in a log that is kept in the facility operating record:
- (i) Criteria required in item (c)4(v)(II) and subpart (d)5(ii) of this paragraph and an explanation of the design criteria.
 - (ii) Any changes to these criteria and the reasons for the changes.
11. The following information shall be recorded in a log that is kept in the facility operating record for use in determining exemptions as provided in the applicability subparagraph of this paragraph and other specific paragraphs:
- (i) An analysis determining the design capacity of the hazardous waste management unit.

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- (ii) A statement listing the hazardous waste influent to and effluent from each hazardous waste management unit subject to the requirements in subparagraphs (c) through (k) of this paragraph and an analysis determining whether these hazardous wastes are heavy liquids.
 - (iii) An up-to-date analysis and the supporting information and data used to determine whether or not equipment is subject to the requirements in subparagraphs (c) through (k) of this paragraph. The record shall include supporting documentation as required by subpart (n)4(iii) of this paragraph when application of the knowledge of the nature of the hazardous waste stream or the process by which it was produced is used. If the owner or operator takes any action (e.g., changing the process that produced the waste) that could result in an increase in the total organic content of the waste contained in or contacted by equipment determined not to be subject to the requirements in subparagraphs (c) through (k) of this paragraph, then a new determination is required.
 - 12. Records of the equipment leak information required by part 4 of this subparagraph and the operating information required by part 5 of this subparagraph need be kept only 3 years.
 - 13. The owner or operator of a facility with equipment that is subject to this paragraph and to regulations at 40 CFR part 60, part 61, or part 63 may elect to determine compliance with this paragraph either by documentation pursuant to subparagraph (o) of this paragraph, or by documentation of compliance with the regulations at 40 CFR part 60, part 61, or part 63 pursuant to the relevant provisions of the regulations at 40 CFR part 60, part 61, or part 63. The documentation of compliance under regulations at 40 CFR part 60, part 61 or part 63 shall be kept with or made readily available with the facility operating record.
- (p) Reporting Requirements [40 CFR 264.1065]
- 1. A semiannual report shall be submitted by owners and operators subject to the requirements of this paragraph to the Division Director by dates specified by the Commissioner. The report shall include the following information:
 - (i) The Environmental Protection Agency identification number, name, and address of the facility.
 - (ii) For each month during the semiannual reporting period:
 - (I) The equipment identification number of each valve for which a leak was not repaired as required in part (h)4 of this paragraph.
 - (II) The equipment identification number of each pump for which a leak was not repaired as required in part (c)3 and subpart (c)4(vi) of this paragraph.
 - (III) The equipment identification number of each compressor for which a leak was not repaired as required in part (d)7 of this paragraph.
 - (iii) Dates of hazardous waste management unit shutdowns that occurred within the semiannual reporting period.

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- (iv) For each month during the semiannual reporting period, dates when the control device installed as required by subparagraphs (c), (d), (e) or (f) of this paragraph exceeded or operated outside of the design specifications as defined in part (o)5 of this paragraph and as indicated by the control device monitoring required by subparagraph (k) of this paragraph and was not corrected within 24 hours, the duration and cause of each exceedance, and any corrective measures taken.

- 2. If, during the semiannual reporting period, leaks from valves, pumps, and compressors are repaired as required in part (h)4, part (c)3, subpart (c)4(vi) and part (d)7 of this paragraph, respectively, and the control device does not exceed or operate outside of the design specifications as defined in part (o)5 of this paragraph for more than 24 hours, a report to the Division Director is not required.

(q)-(dd) (RESERVED) [40 CFR 264.1066-264.1079]

(32) Air Emission Standards for Tanks, Surface Impoundments, and Containers [40 CFR 264 Subpart CC]

(a) Applicability [40 CFR 264.1080]

- 1. The requirements of this paragraph apply to owners and operators of all facilities that treat, store, or dispose of hazardous waste in tanks, surface impoundments, or containers subject to either paragraphs (9), (10), or (11) of this Rule except as subparagraph (1)(b) and part 2 of this subparagraph provide otherwise.
- 2. The requirements of this paragraph do not apply to the following waste management units at the facility:
 - (i) A waste management unit that holds hazardous waste placed in the unit before December 6, 1996, and in which no hazardous waste is added to the unit on or after December 6, 1996.
 - (ii) A container that has a design capacity less than or equal to 0.1 m³.
 - (iii) A tank in which an owner or operator has stopped adding hazardous waste and the owner or operator has begun implementing or completed closure pursuant to an approved closure plan.
 - (iv) A surface impoundment in which an owner or operator has stopped adding hazardous waste (except to implement an approved closure plan) and the owner or operator has begun implementing or completed closure pursuant to an approved closure plan.
 - (v) A waste management unit that is used solely for on-site treatment or storage of hazardous waste that is placed in the unit as a result of implementing remedial activities required under the corrective action authorities of T.C.A. §§68-212-108(l), 68-212-111 or 68-212-201 et seq.
 - (vi) A waste management unit that is used solely for the management of radioactive mixed waste in accordance with all applicable regulations under the authority of the Atomic Energy Act and the Nuclear Waste Policy Act.
 - (vii) A hazardous waste management unit that the owner or operator certifies is equipped with and operating air emission controls in accordance with the requirements of an applicable Clean Air Act regulation codified under 40 CFR

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part 60, part 61, or part 63. For the purpose of complying with this subpart, a tank for which the air emission control includes an enclosure, as opposed to a cover, must be in compliance with the enclosure and control device requirements of part (e)9 of this paragraph, except as provided in subpart (c)3(v) of this paragraph.

- (viii) A tank that has a process vent as defined in subparagraph (30)(b) of this Rule.
 - (ix) Wastewater treatment units as defined in Rule 1200-1-11-.01(2)(a).
3. For the owner and operator of a facility subject to this paragraph who received a final permit under RCRA section 3005 and/or T.C.A. §68-212-108 prior to December 6, 1996, the requirements of this paragraph shall be incorporated into the permit when the permit is reissued in accordance with the requirements of Rule 1200-1-11-.07(7)(i) or reviewed in accordance with the requirements of Rule 1200-1-11-.07(8)(c)4. Until such date when the permit is reissued in accordance with the requirements of Rule 1200-1-11-.07(7)(i) or reviewed in accordance with the requirements of Rule 1200-1-11-.07(8)(c)4, the owner and operator is subject to the requirements of Rule 1200-1-11-.05(29).
4. The requirements of this paragraph, except for the recordkeeping requirements specified in part (j)9 of this paragraph, are administratively stayed for a tank or a container used for the management of hazardous waste generated by organic peroxide manufacturing and its associated laboratory operations when the owner or operator of the unit meets all of the following conditions:
- (i) The owner or operator identifies that the tank or container receives hazardous waste generated by an organic peroxide manufacturing process producing more than one functional family of organic peroxides or multiple organic peroxides within one functional family, that one or more of these organic peroxides could potentially undergo self-accelerating thermal decomposition at or below ambient temperatures, and that organic peroxides are the predominant products manufactured by the process. For the purpose of meeting the conditions of this subpart, “organic peroxide” means an organic compound that contains the bivalent -O-O- structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.
 - (ii) The owner or operator prepares documentation, in accordance with the requirements of part (j)9 of this paragraph, explaining why an undue safety hazard would be created if air emission controls specified in subparagraphs (e) through (h) of this paragraph are installed and operated on the tanks and containers used at the facility to manage the hazardous waste generated by the organic peroxide manufacturing process or processes meeting the conditions of subpart 4(i) of this subparagraph.
 - (iii) The owner or operator notifies the Commissioner in writing that hazardous waste generated by an organic peroxide manufacturing process or processes meeting the conditions of subpart 4(i) of this subparagraph are managed at the facility in tanks or containers meeting the conditions of subpart 4(ii) of this subparagraph. The notification shall state the name and address of the facility, and be signed and dated by an authorized representative of the facility owner or operator.
5. (Reserved) [40 CFR 264.1080(e)]

(b) Definitions [40 CFR 264.1081]

As used in this paragraph, all terms shall have the meaning given to them in Rule 1200-1-11-.05(29)(b), the Act, and Rule .01 through .06 and .09.

(c) Standards: General [40 CFR 264.1082]

1. This subparagraph applies to the management of hazardous waste in tanks, surface impoundments, and containers subject to this paragraph.
2. The owner or operator shall control air pollutant emissions from each hazardous waste management unit in accordance with standards specified in subparagraphs (e) through (h) of this paragraph, as applicable to the hazardous waste management unit, except as provided for in part 3 of this subparagraph.
3. A tank, surface impoundment, or container is exempt from standards specified in subparagraph (32)(e) through (32)(h) of this paragraph, as applicable, provided that the waste management unit is one of the following:
 - (i) A tank, surface impoundment, or container for which all hazardous waste entering the unit has an average VO concentration at the point of waste origination of less than 500 parts per million by weight (ppmw). The average VO concentration shall be determined using the procedures specified in part (d)1 of this paragraph. The owner or operator shall review and update, as necessary, this determination at least once every 12 months following the date of the initial determination for the hazardous waste streams entering the unit.
 - (ii) A tank, surface impoundment, or container for which the organic content of all the hazardous waste entering the waste management unit has been reduced by an organic destruction or removal process that achieves any one of the following conditions:
 - (I) A process that removes or destroys the organics contained in the hazardous waste to a level such that the average VO concentration of the hazardous waste at the point of waste treatment is less than the exit concentration limit (C_e) established for the process. The average VO concentration of the hazardous waste at the point of waste treatment and the exit concentration limit for the process shall be determined using the procedures specified in part (d)2 of this paragraph.
 - (II) A process that removes or destroys the organics contained in the hazardous waste to a level such that the organic reduction efficiency (R) for the process is equal to or greater than 95 percent, and the average VO concentration of the hazardous waste at the point of waste treatment is less than 100 ppmw. The organic reduction efficiency for the process and the average VO concentration of the hazardous waste at the point of waste treatment shall be determined using the procedures specified in part (d)2 of this paragraph.
 - (III) A process that removes or destroys the organics contained in the hazardous waste to a level such that the actual organic mass removal rate (MR) for the process is equal to or greater than the required organic mass removal rate (RMR) established for the process. The

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required organic mass removal rate and the actual organic mass removal rate for the process shall be determined using the procedures specified in part (d)2 of this paragraph.

(IV) A biological process that destroys or degrades the organics contained in the hazardous waste, such that either of the following conditions is met:

I. The organic reduction efficiency (R) for the process is equal to or greater than 95 percent, and the organic biodegradation efficiency (R_{bio}) for the process is equal to or greater than 95 percent. The organic reduction efficiency and the organic biodegradation efficiency for the process shall be determined using the procedures specified in part (d)2 of this paragraph.

II. The total actual organic mass biodegradation rate (MR_{bio}) for all hazardous waste treated by the process is equal to or greater than the required organic mass removal rate (RMR). The required organic mass removal rate and the actual organic mass biodegradation rate for the process shall be determined using the procedures specified in part (d)2 of this paragraph.

(V) A process that removes or destroys the organics contained in the hazardous waste and meets all of the following conditions:

I. From the point of waste origination through the point where the hazardous waste enters the treatment process, the hazardous waste is managed continuously in waste management units which use air emission controls in accordance with the standards specified in subparagraph (e) through (h) of this paragraph, as applicable to the waste management unit.

II. From the point of waste origination through the point where the hazardous waste enters the treatment process, any transfer of the hazardous waste is accomplished through continuous hard-piping or other closed system transfer that does not allow exposure of the waste to the atmosphere. The Department considers a drain system that meets the requirements of 40 CFR part 63, subpart RR--National Emission Standards for Individual Drain Systems to be a closed system.

III. The average VO concentration of the hazardous waste at the point of waste treatment is less than the lowest average VO concentration at the point of waste origination determined for each of the individual waste streams entering the process or 500 ppmw, whichever value is lower. The average VO concentration of each individual waste stream at the point of waste origination shall be determined using the procedures specified in part (d)1 of this paragraph. The average VO concentration of the hazardous waste at the point of waste treatment shall be determined using the procedures specified in part (d)2 of this paragraph.

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- (VI) A process that removes or destroys the organics contained in the hazardous waste to a level such that the organic reduction efficiency (R) for the process is equal to or greater than 95 percent and the owner or operator certifies that the average VO concentration at the point of waste origination for each of the individual waste streams entering the process is less than 10,000 ppmw. The organic reduction efficiency for the process and the average VO concentration of the hazardous waste at the point of waste origination shall be determined using the procedures specified in part (d)2 and (d)1 of this paragraph, respectively.
- (VII) A hazardous waste incinerator for which the owner or operator has either:
- I. Been issued a final permit under Rule 1200-1-11-.07 which implements the requirements of paragraph (15) of this Rule; or
 - II. Has designed and operates the incinerator in accordance with the interim status requirements of Rule 1200-1-11-.05(15).
- (VIII) A boiler or industrial furnace for which the owner or operator has either:
- I. Been issued a final permit under Rule 1200-1-11-.07 which implements the requirements of Rule 1200-1-11-.09(8), or
 - II. Has designed and operates the boiler or industrial furnace in accordance with the interim status requirements of Rule 1200-1-11-.09(8).
- (IX) For the purpose of determining the performance of an organic destruction or removal process in accordance with the conditions in each of item 3(ii)(I) through 3(ii)(VI) of this subparagraph, the owner or operator shall account for VO concentrations determined to be below the limit of detection of the analytical method by using the following VO concentration:
- I. If Method 25D in 40 CFR part 60, appendix A is used for the analysis, one-half the blank value determined in the method at section 4.4 of Method 25D in 40 CFR part 60, appendix A, or a value of 25 ppmw, whichever is less.
 - II. If any other analytical method is used, one-half the sum of the limits of detection established for each organic constituent in the waste that has a Henry's law constant value of at least 0.1 mole-fraction-in-the-gas-phase/mole-fraction-in-the-liquid-phase (0.1 Y/X) (which can also be expressed as 1.8×10^{-6} atmospheres/gram-mole/m³) at 25 degrees Celsius.
- (iii) A tank or surface impoundment used for biological treatment of hazardous waste in accordance with the requirements of item 3(ii)(IV) of this subparagraph.

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- (iv) A tank, surface impoundment, or container for which all hazardous waste placed in the unit either:
 - (I) Meets the numerical concentration limits for organic hazardous constituents, applicable to the hazardous waste, as specified in Rule 1200-1-11-.10--Land Disposal Restrictions under Table "Treatment Standards for Hazardous Waste" in Rule 1200-1-11-.10(3)(a); or
 - (II) The organic hazardous constituents in the waste have been treated by the treatment technology established by the Department for the waste in Rule 1200-1-11-.10(3)(c)1, or have been removed or destroyed by an equivalent method of treatment approved by the Department pursuant to Rule 1200-1-11-.10(3)(c)2.
 - (v) A tank used for bulk feed of hazardous waste to a waste incinerator and all of the following conditions are met:
 - (I) The tank is located inside an enclosure vented to a control device that is designed and operated in accordance with all applicable requirements specified under 40 CFR part 61, subpart FF--National Emission Standards for Benzene Waste Operations for a facility at which the total annual benzene quantity from the facility waste is equal to or greater than 10 megagrams per year;
 - (II) The enclosure and control device serving the tank were installed and began operation prior to November 25, 1996 and
 - (III) The enclosure is designed and operated in accordance with the criteria for a permanent total enclosure as specified in "Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure" under 40 CFR 52.741, appendix B. The enclosure may have permanent or temporary openings to allow worker access; passage of material into or out of the enclosure by conveyor, vehicles, or other mechanical or electrical equipment; or to direct air flow into the enclosure. The owner or operator shall perform the verification procedure for the enclosure as specified in Section 5.0 to "Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure" annually.
4. The Commissioner may at any time perform or request that the owner or operator perform a waste determination for a hazardous waste managed in a tank, surface impoundment, or container exempted from using air emission controls under the provisions of this subparagraph as follows:
- (i) The waste determination for average VO concentration of a hazardous waste at the point of waste origination shall be performed using direct measurement in accordance with the applicable requirements of part (d)1 of this paragraph. The waste determination for a hazardous waste at the point of waste treatment shall be performed in accordance with the applicable requirements of part (d)2 of this paragraph.
 - (ii) In performing a waste determination pursuant to subpart 4(i) of this subparagraph, the sample preparation and analysis shall be conducted as follows:

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- (I) In accordance with the method used by the owner or operator to perform the waste analysis, except in the case specified in item 4(ii)(II) of this subparagraph.
 - (II) If the Commissioner determines that the method used by the owner or operator was not appropriate for the hazardous waste managed in the tank, surface impoundment, or container, then the Commissioner may choose an appropriate method.
- (iii) In a case when the owner or operator is requested to perform the waste determination, the Commissioner may elect to have an authorized representative observe the collection of the hazardous waste samples used for the analysis.
 - (iv) In a case when the results of the waste determination performed or requested by the Commissioner do not agree with the results of a waste determination performed by the owner or operator using knowledge of the waste, then the results of the waste determination performed in accordance with the requirements of subpart 4(i) of this subparagraph shall be used to establish compliance with the requirements of this paragraph.
 - (v) In a case when the owner or operator has used an averaging period greater than 1 hour for determining the average VO concentration of a hazardous waste at the point of waste origination, the Commissioner may elect to establish compliance with this paragraph by performing or requesting that the owner or operator perform a waste determination using direct measurement based on waste samples collected within a 1-hour period as follows:
 - (I) The average VO concentration of the hazardous waste at the point of waste origination shall be determined by direct measurement in accordance with the requirements of part (d)1 of this paragraph.
 - (II) Results of the waste determination performed or requested by the Commissioner showing that the average VO concentration of the hazardous waste at the point of waste origination is equal to or greater than 500 ppmw shall constitute noncompliance with this paragraph except in a case as provided for in item 4(v)(III) of this subparagraph.
 - (III) For the case when the average VO concentration of the hazardous waste at the point of waste origination previously has been determined by the owner or operator using an averaging period greater than 1 hour to be less than 500 ppmw but because of normal operating process variations the VO concentration of the hazardous waste determined by direct measurement for any given 1-hour period may be equal to or greater than 500 ppmw, information that was used by the owner or operator to determine the average VO concentration of the hazardous waste (e.g., test results, measurements, calculations, and other documentation) and recorded in the facility records in accordance with the requirements of part (d)1 and subparagraph (j) of this paragraph shall be considered by the Commissioner together with the results of the waste determination performed or requested by the Commissioner in establishing compliance with this paragraph.
- (d) Waste Determination Procedures [40 CFR 264.1083]

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1. Waste determination procedure to determine average volatile organic (VO) concentration of a hazardous waste at the point of waste origination.
 - (i) An owner or operator shall determine the average VO concentration at the point of waste origination for each hazardous waste placed in a waste management unit exempted under the provisions of subpart (c)3(i) of this paragraph from using air emission controls in accordance with standards specified in subparagraph (e) through (h) of this paragraph, as applicable to the waste management unit.
 - (I) An initial determination of the average VO concentration of the waste stream shall be made before the first time any portion of the material in the hazardous waste stream is placed in a waste management unit exempted under the provisions of subpart (c)3(i) of this paragraph from using air emission controls, and thereafter an initial determination of the average VO concentration of the waste stream shall be made for each averaging period that a hazardous waste is managed in the unit; and
 - (II) Perform a new waste determination whenever changes to the source generating the waste stream are reasonably likely to cause the average VO concentration of the hazardous waste to increase to a level that is equal to or greater than the applicable VO concentration limits specified in subparagraph (c) of this paragraph.
 - (ii) For a waste determination that is required by subpart 1(i) of this subparagraph, the average VO concentration of a hazardous waste at the point of waste origination shall be determined in accordance with the procedures specified in Rule 1200-1-11-.05(29)(e)1(ii) through 1(iv).
2. Waste determination procedures for treated hazardous waste.
 - (i) An owner or operator shall perform the applicable waste determinations for each treated hazardous waste placed in waste management units exempted under the provisions of items (c)3(ii)(I) through (VI) of this paragraph from using air emission controls in accordance with standards specified in subparagraphs (e) through (h) of this paragraph, as applicable to the waste management unit.
 - (I) An initial determination of the average VO concentration of the waste stream shall be made before the first time any portion of the material in the treated waste stream is placed in the exempt waste management unit, and thereafter update the information used for the waste determination at least once every 12 months following the date of the initial waste determination; and
 - (II) Perform a new waste determination whenever changes to the process generating or treating the waste stream are reasonably likely to cause the average VO concentration of the hazardous waste to increase to a level such that the applicable treatment conditions specified in subpart (c)3(ii) of this paragraph are not achieved.
 - (ii) The waste determination for a treated hazardous waste shall be performed in accordance with the procedures specified in Rule 1200-1-11-.05(29)(e)2(ii) through 2(ix), as applicable to the treated hazardous waste.

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3. Procedure to determine the maximum organic vapor pressure of a hazardous waste in a tank.
 - (i) An owner or operator shall determine the maximum organic vapor pressure for each hazardous waste placed in a tank using Tank Level 1 controls in accordance with standards specified in part (e)3 of this paragraph.
 - (ii) The maximum organic vapor pressure of the hazardous waste may be determined in accordance with the procedures specified in Rule 1200-1-11-.05(29)(e)3(ii) through 3(iv).
 4. The procedure for determining no detectable organic emissions for the purpose of complying with this paragraph shall be conducted in accordance with the procedures specified in Rule 1200-1-11-.05(29)(e)4.
- (e) Standards: Tanks [40 CFR 264.1084]
1. The provisions of this subparagraph apply to the control of air pollutant emissions from tanks for which part (c)2 of this paragraph references the use of this subparagraph for such air emission control.
 2. The owner or operator shall control air pollutant emissions from each tank subject to this subparagraph in accordance with the following requirements as applicable:
 - (i) For a tank that manages hazardous waste that meets all of the conditions specified in item 2(i)(I) through 2(i)(III) of this subparagraph, the owner or operator shall control air pollutant emissions from the tank in accordance with the Tank Level 1 controls specified in part 3 of this subparagraph or the Tank Level 2 controls specified in part 4 of this subparagraph.
 - (I) The hazardous waste in the tank has a maximum organic vapor pressure which is less than the maximum organic vapor pressure limit for the tank's design capacity category as follows:
 - I. For a tank design capacity equal to or greater than 151 m³ (40,000 gal.), the maximum organic vapor pressure limit for the tank is 5.2 kPa (0.75 psi).
 - II. For a tank design capacity equal to or greater than 75 m³ (20,000 gal.) but less than 151 m³ (40,000 gal.), the maximum organic vapor pressure limit for the tank is 27.6 kPa (4 psi).
 - III. For a tank design capacity less than 75 m³ (20,000 gal.), the maximum organic vapor pressure limit for the tank is 76.6 kPa (11.1 psi).
 - (II) The hazardous waste in the tank is not heated by the owner or operator to a temperature that is greater than the temperature at which the maximum organic vapor pressure of the hazardous waste is determined for the purpose of complying with item 2(i)(I) of this subparagraph.

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- (III) The hazardous waste in the tank is not treated by the owner or operator using a waste stabilization process, as defined in Rule 1200-1-11-.05(29)(b).
 - (ii) For a tank that manages hazardous waste that does not meet all of the conditions specified in items 2(i)(I) through 2(i)(III) of this subparagraph, the owner or operator shall control air pollutant emissions from the tank by using Tank Level 2 controls in accordance with the requirements of part 4 of this subparagraph. Examples of tanks required to use Tank Level 2 controls include: A tank used for a waste stabilization process; and a tank for which the hazardous waste in the tank has a maximum organic vapor pressure that is equal to or greater than the maximum organic vapor pressure limit for the tank's design capacity category as specified in item 2(i)(I) of this subparagraph.
- 3. Owners and operators controlling air pollutant emissions from a tank using Tank Level 1 controls shall meet the requirements specified in subparts 3(i) through 3(iv) of this subparagraph:
 - (i) The owner or operator shall determine the maximum organic vapor pressure for a hazardous waste to be managed in the tank using Tank Level 1 controls before the first time the hazardous waste is placed in the tank. The maximum organic vapor pressure shall be determined using the procedures specified in part (d)3 of this paragraph. Thereafter, the owner or operator shall perform a new determination whenever changes to the hazardous waste managed in the tank could potentially cause the maximum organic vapor pressure to increase to a level that is equal to or greater than the maximum organic vapor pressure limit for the tank design capacity category specified in item 2(i)(I) of this subparagraph, as applicable to the tank.
 - (ii) The tank shall be equipped with a fixed roof designed to meet the following specifications:
 - (I) The fixed roof and its closure devices shall be designed to form a continuous barrier over the entire surface area of the hazardous waste in the tank. The fixed roof may be a separate cover installed on the tank (e.g., a removable cover mounted on an open-top tank) or may be an integral part of the tank structural design (e.g., a horizontal cylindrical tank equipped with a hatch).
 - (II) The fixed roof shall be installed in a manner such that there are no visible cracks, holes, gaps, or other open spaces between roof section joints or between the interface of the roof edge and the tank wall.
 - (III) Each opening in the fixed roof, and any manifold system associated with the fixed roof, shall be either:
 - I. Equipped with a closure device designed to operate such that when the closure device is secured in the closed position there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the opening and the closure device; or
 - II. Connected by a closed-vent system that is vented to a control device. The control device shall remove or destroy organics in

the vent stream, and shall be operating whenever hazardous waste is managed in the tank, except as provided for in sections 3(ii)(III)II A and B of this subparagraph.

- A. During periods when it is necessary to provide access to the tank for performing the activities of section 3(ii)(III)II B of this subparagraph, venting of the vapor headspace underneath the fixed roof to the control device is not required, opening of closure devices is allowed, and removal of the fixed roof is allowed. Following completion of the activity, the owner or operator shall promptly secure the closure device in the closed position or reinstall the cover, as applicable, and resume operation of the control device.
- B. During periods of routine inspection, maintenance, or other activities needed for normal operations, and for removal of accumulated sludge or other residues from the bottom of the tank.

- (IV) The fixed roof and its closure devices shall be made of suitable materials that will minimize exposure of the hazardous waste to the atmosphere, to the extent practical, and will maintain the integrity of the fixed roof and closure devices throughout their intended service life. Factors to be considered when selecting the materials for and designing the fixed roof and closure devices shall include: Organic vapor permeability, the effects of any contact with the hazardous waste or its vapors managed in the tank; the effects of outdoor exposure to wind, moisture, and sunlight; and the operating practices used for the tank on which the fixed roof is installed.

- (iii) Whenever a hazardous waste is in the tank, the fixed roof shall be installed with each closure device secured in the closed position except as follows:

- (I) Opening of closure devices or removal of the fixed roof is allowed at the following times:

- I. To provide access to the tank for performing routine inspection, maintenance, or other activities needed for normal operations. Examples of such activities include those times when a worker needs to open a port to sample the liquid in the tank, or when a worker needs to open a hatch to maintain or repair equipment. Following completion of the activity, the owner or operator shall promptly secure the closure device in the closed position or reinstall the cover, as applicable, to the tank.
- II. To remove accumulated sludge or other residues from the bottom of tank.

- (II) Opening of a spring-loaded pressure-vacuum relief valve, conservation vent, or similar type of pressure relief device which vents to the atmosphere is allowed during normal operations for the purpose of

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maintaining the tank internal pressure in accordance with the tank design specifications. The device shall be designed to operate with no detectable organic emissions when the device is secured in the closed position. The settings at which the device opens shall be established such that the device remains in the closed position whenever the tank internal pressure is within the internal pressure operating range determined by the owner or operator based on the tank manufacturer recommendations, applicable regulations, fire protection and prevention codes, standard engineering codes and practices, or other requirements for the safe handling of flammable, ignitable, explosive, reactive, or hazardous materials. Examples of normal operating conditions that may require these devices to open are during those times when the tank internal pressure exceeds the internal pressure operating range for the tank as a result of loading operations or diurnal ambient temperature fluctuations.

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- (III) Opening of a safety device, as defined in Rule 1200-1-11-.05(29)(b), is allowed at any time conditions require doing so to avoid an unsafe condition.
- (iv) The owner or operator shall inspect the air emission control equipment in accordance with the following requirements.
 - (I) The fixed roof and its closure devices shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions. Defects include, but are not limited to, visible cracks, holes, or gaps in the roof sections or between the roof and the tank wall; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices.
 - (II) The owner or operator shall perform an initial inspection of the fixed roof and its closure devices on or before the date that the tank becomes subject to this subparagraph. Thereafter, the owner or operator shall perform the inspections at least once every year except under the special conditions provided for in part 12 of this subparagraph.
 - (III) In the event that a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of part 11 of this subparagraph.
 - (IV) The owner or operator shall maintain a record of the inspection in accordance with the requirements specified in part (j)2 of this paragraph.
- 4. Owners and operators controlling air pollutant emissions from a tank using Tank Level 2 controls shall use one of the following tanks:
 - (i) A fixed-roof tank equipped with an internal floating roof in accordance with the requirements specified in part 5 of this subparagraph;
 - (ii) A tank equipped with an external floating roof in accordance with the requirements specified in part 6 of this subparagraph;

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- (iii) A tank vented through a closed-vent system to a control device in accordance with the requirements specified in part 7 of this subparagraph;
 - (iv) A pressure tank designed and operated in accordance with the requirements specified in part 8 of this subparagraph; or
 - (v) A tank located inside an enclosure that is vented through a closed-vent system to an enclosed combustion control device in accordance with the requirements specified in part 9 of this subparagraph.
5. The owner or operator who controls air pollutant emissions from a tank using a fixed roof with an internal floating roof shall meet the requirements specified in subparts 5(i) through 5(iii) of this subparagraph.
- (i) The tank shall be equipped with a fixed roof and an internal floating roof in accordance with the following requirements:
 - (I) The internal floating roof shall be designed to float on the liquid surface except when the floating roof must be supported by the leg supports.
 - (II) The internal floating roof shall be equipped with a continuous seal between the wall of the tank and the floating roof edge that meets either of the following requirements:
 - I. A single continuous seal that is either a liquid-mounted seal or a metallic shoe seal, as defined in Rule 1200-1-11-.05(29)(b); or
 - II. Two continuous seals mounted one above the other. The lower seal may be a vapor-mounted seal.
 - (III) The internal floating roof shall meet the following specifications:
 - I. Each opening in a noncontact internal floating roof except for automatic bleeder vents (vacuum breaker vents) and the rim space vents is to provide a projection below the liquid surface.
 - II. Each opening in the internal floating roof shall be equipped with a gasketed cover or a gasketed lid except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains.
 - III. Each penetration of the internal floating roof for the purpose of sampling shall have a slit fabric cover that covers at least 90 percent of the opening.
 - IV. Each automatic bleeder vent and rim space vent shall be gasketed.
 - V. Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover.

- VI. Each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof shall have a flexible fabric sleeve seal or a gasketed sliding cover.
- (ii) The owner or operator shall operate the tank in accordance with the following requirements:
- (I) When the floating roof is resting on the leg supports, the process of filling, emptying, or refilling shall be continuous and shall be completed as soon as practical.
 - (II) Automatic bleeder vents are to be set closed at all times when the roof is floating, except when the roof is being floated off or is being landed on the leg supports.
 - (III) Prior to filling the tank, each cover, access hatch, gauge float well or lid on any opening in the internal floating roof shall be bolted or fastened closed (i.e., no visible gaps). Rim space vents are to be set to open only when the internal floating roof is not floating or when the pressure beneath the rim exceeds the manufacturer's recommended setting.
- (iii) The owner or operator shall inspect the internal floating roof in accordance with the procedures specified as follows:
- (I) The floating roof and its closure devices shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions. Defects include, but are not limited to: The internal floating roof is not floating on the surface of the liquid inside the tank; liquid has accumulated on top of the internal floating roof; any portion of the roof seals have detached from the roof rim; holes, tears, or other openings are visible in the seal fabric; the gaskets no longer close off the hazardous waste surface from the atmosphere; or the slotted membrane has more than 10 percent open area.
 - (II) The owner or operator shall inspect the internal floating roof components as follows except as provided in item 5(iii)(III) of this subparagraph:
 - I. Visually inspect the internal floating roof components through openings on the fixed-roof (e.g., manholes and roof hatches) at least once every 12 months after initial fill, and
 - II. Visually inspect the internal floating roof, primary seal, secondary seal (if one is in service), gaskets, slotted membranes, and sleeve seals (if any) each time the tank is emptied and degassed and at least every 10 years.
 - (III) As an alternative to performing the inspections specified in item 5(iii)(II) of this subparagraph for an internal floating roof equipped with two continuous seals mounted one above the other, the owner or operator may visually inspect the internal floating roof, primary and secondary seals, gaskets, slotted membranes, and sleeve seals (if any) each time the tank is emptied and degassed and at least every 5 years.

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- (IV) Prior to each inspection required by item 5(iii)(II) or 5(iii)(III) of this subparagraph, the owner or operator shall notify the Commissioner in advance of each inspection to provide the Commissioner with the opportunity to have an observer present during the inspection. The owner or operator shall notify the Commissioner of the date and location of the inspection as follows:
 - I. Prior to each visual inspection of an internal floating roof in a tank that has been emptied and degassed, written notification shall be prepared and sent by the owner or operator so that it is received by the Commissioner at least 30 calendar days before refilling the tank except when an inspection is not planned as provided for in subitem 5(iii)(IV)II of this subparagraph.
 - II. When a visual inspection is not planned and the owner or operator could not have known about the inspection 30 calendar days before refilling the tank, the owner or operator shall notify the Commissioner as soon as possible, but no later than 7 calendar days before refilling of the tank. This notification may be made by telephone and immediately followed by a written explanation for why the inspection is unplanned. Alternatively, written notification, including the explanation for the unplanned inspection, may be sent so that it is received by the Commissioner at least 7 calendar days before refilling the tank.
- (V) In the event that a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of part 11 of this subparagraph.
- (VI) The owner or operator shall maintain a record of the inspection in accordance with the requirements specified in part (j)2 of this paragraph.
- (iv) Safety devices, as defined in Rule 1200-1-11-.05(29)(b), may be installed and operated as necessary on any tank complying with the requirements of part 5 of this subparagraph.
- 6. The owner or operator who controls air pollutant emissions from a tank using an external floating roof shall meet the requirements specified in subparts 6(i) through 6(iii) of this subparagraph.
 - (i) The owner or operator shall design the external floating roof in accordance with the following requirements:
 - (I) The external floating roof shall be designed to float on the liquid surface except when the floating roof must be supported by the leg supports.
 - (II) The floating roof shall be equipped with two continuous seals, one above the other, between the wall of the tank and the roof edge. The

lower seal is referred to as the primary seal, and the upper seal is referred to as the secondary seal.

I. The primary seal shall be a liquid-mounted seal or a metallic shoe seal, as defined in Rule 1200-1-11-.05(29)(b). The total area of the gaps between the tank wall and the primary seal shall not exceed 212 square centimeters (cm²) per meter of tank diameter, and the width of any portion of these gaps shall not exceed 3.8 centimeters (cm). If a metallic shoe seal is used for the primary seal, the metallic shoe seal shall be designed so that one end extends into the liquid in the tank and the other end extends a vertical distance of at least 61 centimeters above the liquid surface.

II. The secondary seal shall be mounted above the primary seal and cover the annular space between the floating roof and the wall of the tank. The total area of the gaps between the tank wall and the secondary seal shall not exceed 21.2 square centimeters (cm²) per meter of tank diameter, and the width of any portion of these gaps shall not exceed 1.3 centimeters (cm).

(III) The external floating roof shall meet the following specifications:

I. Except for automatic bleeder vents (vacuum breaker vents) and rim space vents, each opening in a noncontact external floating roof shall provide a projection below the liquid surface.

II. Except for automatic bleeder vents, rim space vents, roof drains, and leg sleeves, each opening in the roof shall be equipped with a gasketed cover, seal, or lid.

III. Each access hatch and each gauge float well shall be equipped with a cover designed to be bolted or fastened when the cover is secured in the closed position.

IV. Each automatic bleeder vent and each rim space vent shall be equipped with a gasket.

V. Each roof drain that empties into the liquid managed in the tank shall be equipped with a slotted membrane fabric cover that covers at least 90 percent of the area of the opening.

VI. Each unslotted and slotted guide pole well shall be equipped with a gasketed sliding cover or a flexible fabric sleeve seal.

VII. Each unslotted guide pole shall be equipped with a gasketed cap on the end of the pole.

VIII. Each slotted guide pole shall be equipped with a gasketed float or other device which closes off the liquid surface from the atmosphere.

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- IX. Each gauge hatch and each sample well shall be equipped with a gasketed cover.
- (ii) The owner or operator shall operate the tank in accordance with the following requirements:
- (I) When the floating roof is resting on the leg supports, the process of filling, emptying, or refilling shall be continuous and shall be completed as soon as practical.
 - (II) Except for automatic bleeder vents, rim space vents, roof drains, and leg sleeves, each opening in the roof shall be secured and maintained in a closed position at all times except when the closure device must be open for access.
 - (III) Covers on each access hatch and each gauge float well shall be bolted or fastened when secured in the closed position.
 - (IV) Automatic bleeder vents shall be set closed at all times when the roof is floating, except when the roof is being floated off or is being landed on the leg supports.
 - (V) Rim space vents shall be set to open only at those times that the roof is being floated off the roof leg supports or when the pressure beneath the rim seal exceeds the manufacturer's recommended setting.
 - (VI) The cap on the end of each unslotted guide pole shall be secured in the closed position at all times except when measuring the level or collecting samples of the liquid in the tank.
 - (VII) The cover on each gauge hatch or sample well shall be secured in the closed position at all times except when the hatch or well must be opened for access.
 - (VIII) Both the primary seal and the secondary seal shall completely cover the annular space between the external floating roof and the wall of the tank in a continuous fashion except during inspections.
- (iii) The owner or operator shall inspect the external floating roof in accordance with the procedures specified as follows:
- (I) The owner or operator shall measure the external floating roof seal gaps in accordance with the following requirements:
 - I. The owner or operator shall perform measurements of gaps between the tank wall and the primary seal within 60 calendar days after initial operation of the tank following installation of the floating roof and, thereafter, at least once every 5 years.
 - II. The owner or operator shall perform measurements of gaps between the tank wall and the secondary seal within 60 calendar days after initial operation of the tank following installation of the floating roof and, thereafter, at least once every year.

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- III. If a tank ceases to hold hazardous waste for a period of 1 year or more, subsequent introduction of hazardous waste into the tank shall be considered an initial operation for the purposes of subitems 6(iii)(I)I and 6(iii)(I)II of this subparagraph.
 - IV. The owner or operator shall determine the total surface area of gaps in the primary seal and in the secondary seal individually using the following procedure:
 - A. The seal gap measurements shall be performed at one or more floating roof levels when the roof is floating off the roof supports.
 - B. Seal gaps, if any, shall be measured around the entire perimeter of the floating roof in each place where a 0.32-centimeter (cm) diameter uniform probe passes freely (without forcing or binding against the seal) between the seal and the wall of the tank and measure the circumferential distance of each such location.
 - C. For a seal gap measured under subpart 6(iii) of this subparagraph, the gap surface area shall be determined by using probes of various widths to measure accurately the actual distance from the tank wall to the seal and multiplying each such width by its respective circumferential distance.
 - D. The total gap area shall be calculated by adding the gap surface areas determined for each identified gap location for the primary seal and the secondary seal individually, and then dividing the sum for each seal type by the nominal diameter of the tank. These total gap areas for the primary seal and secondary seal are then compared to the respective standards for the seal type as specified in item 6(i)(II) of this subparagraph.
 - V. In the event that the seal gap measurements do not conform to the specifications in item 6(i)(II) of this subparagraph, the owner or operator shall repair the defect in accordance with the requirements of part 11 of this subparagraph.
 - VI. The owner or operator shall maintain a record of the inspection in accordance with the requirements specified in part (j)2 of this paragraph.
- (II) The owner or operator shall visually inspect the external floating roof in accordance with the following requirements:
- I. The floating roof and its closure devices shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions. Defects include, but are not limited to: Holes, tears, or other openings in the rim seal

or seal fabric of the floating roof; a rim seal detached from the floating roof; all or a portion of the floating roof deck being submerged below the surface of the liquid in the tank; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices.

- II. The owner or operator shall perform an initial inspection of the external floating roof and its closure devices on or before the date that the tank becomes subject to this paragraph. Thereafter, the owner or operator shall perform the inspections at least once every year except for the special conditions provided for in part 12 of this subparagraph.
 - III. In the event that a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of part 11 of this subparagraph.
 - IV. The owner or operator shall maintain a record of the inspection in accordance with the requirements specified in part (j)2 of this paragraph.
- (III) Prior to each inspection required by item 6(iii)(I) or 6(iii)(II) of this subparagraph, the owner or operator shall notify the Commissioner in advance of each inspection to provide the Commissioner with the opportunity to have an observer present during the inspection. The owner or operator shall notify the Commissioner of the date and location of the inspection as follows:
- I. Prior to each inspection to measure external floating roof seal gaps as required under item 6(iii)(I) of this subparagraph, written notification shall be prepared and sent by the owner or operator so that it is received by the Commissioner at least 30 calendar days before the date the measurements are scheduled to be performed.
 - II. Prior to each visual inspection of an external floating roof in a tank that has been emptied and degassed, written notification shall be prepared and sent by the owner or operator so that it is received by the Commissioner at least 30 calendar days before refilling the tank except when an inspection is not planned as provided for in subitem 6(iii)(III)III of this subparagraph.
 - III. When a visual inspection is not planned and the owner or operator could not have known about the inspection 30 calendar days before refilling the tank, the owner or operator shall notify the Commissioner as soon as possible, but no later than 7 calendar days before refilling of the tank. This notification may be made by telephone and immediately followed by a written explanation for why the inspection is unplanned. Alternatively, written notification, including the explanation for the unplanned inspection, may be sent so that

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it is received by the Commissioner at least 7 calendar days before refilling the tank.

- (iv) Safety devices, as defined in Rule 1200-1-11.05(29)(b), may be installed and operated as necessary on any tank complying with the requirements of part 6 of this subparagraph.

7. The owner or operator who controls air pollutant emissions from a tank by venting the tank to a control device shall meet the requirements specified in subparts 7(i) through 7(iii) of this subparagraph.

- (i) The tank shall be covered by a fixed roof and vented directly through a closed-vent system to a control device in accordance with the following requirements:

- (I) The fixed roof and its closure devices shall be designed to form a continuous barrier over the entire surface area of the liquid in the tank.

- (II) Each opening in the fixed roof not vented to the control device shall be equipped with a closure device. If the pressure in the vapor headspace underneath the fixed roof is less than atmospheric pressure when the control device is operating, the closure devices shall be designed to operate such that when the closure device is secured in the closed position there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the cover opening and the closure device. If the pressure in the vapor headspace underneath the fixed roof is equal to or greater than atmospheric pressure when the control device is operating, the closure device shall be designed to operate with no detectable organic emissions.

- (III) The fixed roof and its closure devices shall be made of suitable materials that will minimize exposure of the hazardous waste to the atmosphere, to the extent practical, and will maintain the integrity of the fixed roof and closure devices throughout their intended service life. Factors to be considered when selecting the materials for and designing the fixed roof and closure devices shall include: Organic vapor permeability, the effects of any contact with the liquid and its vapor managed in the tank; the effects of outdoor exposure to wind, moisture, and sunlight; and the operating practices used for the tank on which the fixed roof is installed.

- (IV) The closed-vent system and control device shall be designed and operated in accordance with the requirements of subparagraph (h) of this paragraph.

- (ii) Whenever a hazardous waste is in the tank, the fixed roof shall be installed with each closure device secured in the closed position and the vapor headspace underneath the fixed roof vented to the control device except as follows:

- (I) Venting to the control device is not required, and opening of closure devices or removal of the fixed roof is allowed at the following times:

- I. To provide access to the tank for performing routine inspection, maintenance, or other activities needed for normal operations. Examples of such activities include those times

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when a worker needs to open a port to sample liquid in the tank, or when a worker needs to open a hatch to maintain or repair equipment. Following completion of the activity, the owner or operator shall promptly secure the closure device in the closed position or reinstall the cover, as applicable, to the tank.

- II. To remove accumulated sludge or other residues from the bottom of a tank.
- (II) Opening of a safety device, as defined in Rule 1200-1-11-.05(29)(b), is allowed at any time conditions require doing so to avoid an unsafe condition.
- (iii) The owner or operator shall inspect and monitor the air emission control equipment in accordance with the following procedures:
 - (I) The fixed roof and its closure devices shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions. Defects include, but are not limited to, visible cracks, holes, or gaps in the roof sections or between the roof and the tank wall; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices.
 - (II) The closed-vent system and control device shall be inspected and monitored by the owner or operator in accordance with the procedures specified in subparagraph (h) of this paragraph.
 - (III) The owner or operator shall perform an initial inspection of the air emission control equipment on or before the date that the tank becomes subject to this subparagraph. Thereafter, the owner or operator shall perform the inspections at least once every year except for the special conditions provided for in part 12 of this subparagraph.
 - (IV) In the event that a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of part 11 of this subparagraph.
 - (V) The owner or operator shall maintain a record of the inspection in accordance with the requirements specified in part (j)2 of this paragraph.
- 8. The owner or operator who controls air pollutant emissions by using a pressure tank shall meet the following requirements.
 - (i) The tank shall be designed not to vent to the atmosphere as a result of compression of the vapor headspace in the tank during filling of the tank to its design capacity.
 - (ii) All tank openings shall be equipped with closure devices designed to operate with no detectable organic emissions as determined using the procedure specified in part (d)4 of this paragraph.

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- (iii) Whenever a hazardous waste is in the tank, the tank shall be operated as a closed system that does not vent to the atmosphere except under either or the following conditions as specified in item (I) or (II) of this subpart:
 - (I) At those times when opening of a safety device, as defined in Rule 1200-1-11-.05(29)(b), is required to avoid an unsafe condition.
 - (II) At those times when purging of inerts from the tank is required and the purge stream is routed to a closed-vent system and control device designed and operated in accordance with the requirements of subparagraph (32)(h) of this Rule.
9. The owner or operator who controls air pollutant emissions by using an enclosure vented through a closed-vent system to an enclosed combustion control device shall meet the requirements specified in subparts 9(i) through 9(iv) of this subparagraph.
- (i) The tank shall be located inside an enclosure. The enclosure shall be designed and operated in accordance with the criteria for a permanent total enclosure as specified in "Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure" under 40 CFR 52.741, appendix B. The enclosure may have permanent or temporary openings to allow worker access; passage of material into or out of the enclosure by conveyor, vehicles, or other mechanical means; entry of permanent mechanical or electrical equipment; or direct airflow into the enclosure. The owner or operator shall perform the verification procedure for the enclosure as specified in Section 5.0 to "Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure" initially when the enclosure is first installed and, thereafter, annually.
 - (ii) The enclosure shall be vented through a closed-vent system to an enclosed combustion control device that is designed and operated in accordance with the standards for either a vapor incinerator, boiler, or process heater specified in subparagraph (h) of this paragraph.
 - (iii) Safety devices, as defined in Rule 1200-1-11-.05(29)(b), may be installed and operated as necessary on any enclosure, closed-vent system, or control device used to comply with the requirements of subparts 9(i) and 9(ii) of this subparagraph.
 - (iv) The owner or operator shall inspect and monitor the closed-vent system and control device as specified in subparagraph (h) of this paragraph.
10. The owner or operator shall transfer hazardous waste to a tank subject to this subparagraph in accordance with the following requirements:
- (i) Transfer of hazardous waste, except as provided in subpart 10(ii) of this subparagraph, to the tank from another tank subject to this subparagraph or from a surface impoundment subject to subparagraph (f) of this paragraph shall be conducted using continuous hard-piping or another closed system that does not allow exposure of the hazardous waste to the atmosphere. For the purpose of complying with this provision, an individual drain system is considered to be a closed system when it meets the requirements of 40 CFR part 63, subpart RR--National Emission Standards for Individual Drain Systems.

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- (ii) The requirements of subpart 9(i) of this subparagraph do not apply when transferring a hazardous waste to the tank under any of the following conditions:
 - (I) The hazardous waste meets the average VO concentration conditions specified in subpart (c)3(i) of this paragraph at the point of waste origination.
 - (II) The hazardous waste has been treated by an organic destruction or removal process to meet the requirements in subpart (c)3(ii) of this paragraph.
 - (III) The hazardous waste meets the requirements of subpart (c)3(iv) of this paragraph.
- 11. The owner or operator shall repair each defect detected during an inspection performed in accordance with the requirements of subpart 3(iv), 5(iii), 6(iii), or 7(iii) of this subparagraph as follows:
 - (i) The owner or operator shall make first efforts at repair of the defect no later than 5 calendar days after detection, and repair shall be completed as soon as possible but no later than 45 calendar days after detection except as provided in subpart 11(ii) of this subparagraph.
 - (ii) Repair of a defect may be delayed beyond 45 calendar days if the owner or operator determines that repair of the defect requires emptying or temporary removal from service of the tank and no alternative tank capacity is available at the site to accept the hazardous waste normally managed in the tank. In this case, the owner or operator shall repair the defect the next time the process or unit that is generating the hazardous waste managed in the tank stops operation. Repair of the defect shall be completed before the process or unit resumes operation.
- 12. Following the initial inspection and monitoring of the cover as required by the applicable provisions of this subpart, subsequent inspection and monitoring may be performed at intervals longer than 1 year under the following special conditions:
 - (i) In the case when inspecting or monitoring the cover would expose a worker to dangerous, hazardous, or other unsafe conditions, then the owner or operator may designate a cover as an "unsafe to inspect and monitor cover" and comply with all of the following requirements:
 - (I) Prepare a written explanation for the cover stating the reasons why the cover is unsafe to visually inspect or to monitor, if required.
 - (II) Develop and implement a written plan and schedule to inspect and monitor the cover, using the procedures specified in the applicable subparagraph of this paragraph, as frequently as practicable during those times when a worker can safely access the cover.
 - (ii) In the case when a tank is buried partially or entirely underground, an owner or operator is required to inspect and monitor, as required by the applicable provisions of this subparagraph, only those portions of the tank cover and those

connections to the tank (e.g., fill ports, access hatches, gauge wells, etc.) that are located on or above the ground surface.

(f) Standards: Surface Impoundments [40 CFR 264.1085]

1. The provisions of this subparagraph apply to the control of air pollutant emissions from surface impoundments for which part (c)2 of this paragraph references the use of this subparagraph for such air emission control.
2. The owner or operator shall control air pollutant emissions from the surface impoundment by installing and operating either of the following:
 - (i) A floating membrane cover in accordance with the provisions specified in part 3 of this subparagraph; or
 - (ii) A cover that is vented through a closed-vent system to a control device in accordance with the provisions specified in part 4 of this subparagraph.
3. The owner or operator who controls air pollutant emissions from a surface impoundment using a floating membrane cover shall meet the requirements specified in subparts 3(i) through 3(iii) of this subparagraph.
 - (i) The surface impoundment shall be equipped with a floating membrane cover designed to meet the following specifications:
 - (I) The floating membrane cover shall be designed to float on the liquid surface during normal operations and form a continuous barrier over the entire surface area of the liquid.
 - (II) The cover shall be fabricated from a synthetic membrane material that is either:
 - I. High density polyethylene (HDPE) with a thickness no less than 2.5 millimeters (mm); or
 - II. A material or a composite of different materials determined to have both organic permeability properties that are equivalent to those of the material listed in subitem 3(i)(II)I of this subparagraph and chemical and physical properties that maintain the material integrity for the intended service life of the material.
 - (III) The cover shall be installed in a manner such that there are no visible cracks, holes, gaps, or other open spaces between cover section seams or between the interface of the cover edge and its foundation mountings.
 - (IV) Except as provided for in item 3(i)(V) of this subparagraph, each opening in the floating membrane cover shall be equipped with a closure device designed to operate such that when the closure device is secured in the closed position there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the cover opening and the closure device.

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- (V) The floating membrane cover may be equipped with one or more emergency cover drains for removal of stormwater. Each emergency cover drain shall be equipped with a slotted membrane fabric cover that covers at least 90 percent of the area of the opening or a flexible fabric sleeve seal.
 - (VI) The closure devices shall be made of suitable materials that will minimize exposure of the hazardous waste to the atmosphere, to the extent practical, and will maintain the integrity of the closure devices throughout their intended service life. Factors to be considered when selecting the materials of construction and designing the cover and closure devices shall include: Organic vapor permeability; the effects of any contact with the liquid and its vapor managed in the surface impoundment; the effects of outdoor exposure to wind, moisture, and sunlight; and the operating practices used for the surface impoundment on which the floating membrane cover is installed.
- (ii) Whenever a hazardous waste is in the surface impoundment, the floating membrane cover shall float on the liquid and each closure device shall be secured in the closed position except as follows:
- (I) Opening of closure devices or removal of the cover is allowed at the following times:
 - I. To provide access to the surface impoundment for performing routine inspection, maintenance, or other activities needed for normal operations. Examples of such activities include those times when a worker needs to open a port to sample the liquid in the surface impoundment, or when a worker needs to open a hatch to maintain or repair equipment. Following completion of the activity, the owner or operator shall promptly replace the cover and secure the closure device in the closed position, as applicable.
 - II. To remove accumulated sludge or other residues from the bottom of surface impoundment.
 - (II) Opening of a safety device, as defined in Rule 1200-1-11-.05(29)(b), is allowed at any time conditions require doing so to avoid an unsafe condition.
- (iii) The owner or operator shall inspect the floating membrane cover in accordance with the following procedures:
- (I) The floating membrane cover and its closure devices shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions. Defects include, but are not limited to, visible cracks, holes, or gaps in the cover section seams or between the interface of the cover edge and its foundation mountings; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices.

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- (II) The owner or operator shall perform an initial inspection of the floating membrane cover and its closure devices on or before the date that the surface impoundment becomes subject to this subparagraph. Thereafter, the owner or operator shall perform the inspections at least once every year except for the special conditions provided for in part 7 of this subparagraph.
 - (III) In the event that a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of part 6 of subparagraph.
 - (IV) The owner or operator shall maintain a record of the inspection in accordance with the requirements specified in part (j)3 of this paragraph.
4. The owner or operator who controls air pollutant emissions from a surface impoundment using a cover vented to a control device shall meet the requirements specified in subparts 4(i) through 4(iii) of this subparagraph.
- (i) The surface impoundment shall be covered by a cover and vented directly through a closed-vent system to a control device in accordance with the following requirements:
 - (I) The cover and its closure devices shall be designed to form a continuous barrier over the entire surface area of the liquid in the surface impoundment.
 - (II) Each opening in the cover not vented to the control device shall be equipped with a closure device. If the pressure in the vapor headspace underneath the cover is less than atmospheric pressure when the control device is operating, the closure devices shall be designed to operate such that when the closure device is secured in the closed position there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the cover opening and the closure device. If the pressure in the vapor headspace underneath the cover is equal to or greater than atmospheric pressure when the control device is operating, the closure device shall be designed to operate with no detectable organic emissions using the procedure specified in part (d)4 of this paragraph.
 - (III) The cover and its closure devices shall be made of suitable materials that will minimize exposure of the hazardous waste to the atmosphere, to the extent practical, and will maintain the integrity of the cover and closure devices throughout their intended service life. Factors to be considered when selecting the materials of construction and designing the cover and closure devices shall include: Organic vapor permeability; the effects of any contact with the liquid or its vapors managed in the surface impoundment; the effects of outdoor exposure to wind, moisture, and sunlight; and the operating practices used for the surface impoundment on which the cover is installed.
 - (IV) The closed-vent system and control device shall be designed and operated in accordance with the requirements of subparagraph (h) of this paragraph.

- (ii) Whenever a hazardous waste is in the surface impoundment, the cover shall be installed with each closure device secured in the closed position and the vapor headspace underneath the cover vented to the control device except as follows:
- (I) Venting to the control device is not required, and opening of closure devices or removal of the cover is allowed at the following times:
- I. To provide access to the surface impoundment for performing routine inspection, maintenance, or other activities needed for normal operations. Examples of such activities include those times when a worker needs to open a port to sample liquid in the surface impoundment, or when a worker needs to open a hatch to maintain or repair equipment. Following completion of the activity, the owner or operator shall promptly secure the closure device in the closed position or reinstall the cover, as applicable, to the surface impoundment.
- II. To remove accumulated sludge or other residues from the bottom of the surface impoundment.
- (II) Opening of a safety device, as defined in Rule 1200-1-11-.05(29)(b), is allowed at any time conditions require doing so to avoid an unsafe condition.
- (iii) The owner or operator shall inspect and monitor the air emission control equipment in accordance with the following procedures:
- (I) The surface impoundment cover and its closure devices shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions. Defects include, but are not limited to, visible cracks, holes, or gaps in the cover section seams or between the interface of the cover edge and its foundation mountings; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices.
- (II) The closed-vent system and control device shall be inspected and monitored by the owner or operator in accordance with the procedures specified in subparagraph (h) of this paragraph.
- (III) The owner or operator shall perform an initial inspection of the air emission control equipment on or before the date that the surface impoundment becomes subject to this subparagraph. Thereafter, the owner or operator shall perform the inspections at least once every year except for the special conditions provided for in part 7 of this subparagraph.
- (IV) In the event that a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of part 6 of this subparagraph.

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- (V) The owner or operator shall maintain a record of the inspection in accordance with the requirements specified in part (j)3 of this paragraph.
5. The owner or operator shall transfer hazardous waste to a surface impoundment subject to this section in accordance with the following requirements:
- (i) Transfer of hazardous waste, except as provided in subpart 5(ii) of this subparagraph, to the surface impoundment from another surface impoundment subject to this subparagraph or from a tank subject to subparagraph (e) of this paragraph shall be conducted using continuous hard- piping or another closed system that does not allow exposure of the waste to the atmosphere. For the purpose of complying with this provision, an individual drain system is considered to be a closed system when it meets the requirements of 40 CFR part 63, subpart RR--National Emission Standards for Individual Drain Systems.
 - (ii) The requirements of subpart 5(i) of this subparagraph do not apply when transferring a hazardous waste to the surface impoundment under either of the following conditions:
 - (I) The hazardous waste meets the average VO concentration conditions specified in subpart (c)3(i) of this paragraph at the point of waste origination.
 - (II) The hazardous waste has been treated by an organic destruction or removal process to meet the requirements in subpart (c)3(ii) of this paragraph.
 - (III) The hazardous waste meets the requirements of subpart (c)3(iv) of this paragraph.
6. The owner or operator shall repair each defect detected during an inspection performed in accordance with the requirements of subpart 3(iii) or 4(iii) of this subparagraph as follows:
- (i) The owner or operator shall make first efforts at repair of the defect no later than 5 calendar days after detection and repair shall be completed as soon as possible but no later than 45 calendar days after detection except as provided in subpart 6(ii) of this subparagraph.
 - (ii) Repair of a defect may be delayed beyond 45 calendar days if the owner or operator determines that repair of the defect requires emptying or temporary removal from service of the surface impoundment and no alternative capacity is available at the site to accept the hazardous waste normally managed in the surface impoundment. In this case, the owner or operator shall repair the defect the next time the process or unit that is generating the hazardous waste managed in the surface impoundment stops operation. Repair of the defect shall be completed before the process or unit resumes operation.
7. Following the initial inspection and monitoring of the cover as required by the applicable provisions of this paragraph, subsequent inspection and monitoring may be performed at intervals longer than 1 year in the case when inspecting or monitoring the cover would expose a worker to dangerous, hazardous, or other unsafe conditions. In this case, the

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owner or operator may designate the cover as an ``unsafe to inspect and monitor cover" and comply with all of the following requirements:

- (i) Prepare a written explanation for the cover stating the reasons why the cover is unsafe to visually inspect or to monitor, if required.
- (ii) Develop and implement a written plan and schedule to inspect and monitor the cover using the procedures specified in the applicable section of this paragraph as frequently as practicable during those times when a worker can safely access the cover.

(g) Standards: Containers [40 CFR 264.1086]

1. The provisions of this subparagraph apply to the control of air pollutant emissions from containers for which part (c)2 of this paragraph references the use of this subparagraph for such air emission control.
2. General requirements.
 - (i) The owner or operator shall control air pollutant emissions from each container subject to this subparagraph in accordance with the following requirements, as applicable to the container, except when the special provisions for waste stabilization processes specified in subpart 2(ii) of this subparagraph apply to the container.
 - (I) For a container having a design capacity greater than 0.1 m³ (26 gal.) and less than or equal to 0.46 m³ (119 gal.), the owner or operator shall control air pollutant emissions from the container in accordance with the Container Level 1 standards specified in part 3 of this subparagraph.
 - (II) For a container having a design capacity greater than 0.46 m³ (119 gal.) that is not in light material service, the owner or operator shall control air pollutant emissions from the container in accordance with the Container Level 1 standards specified in part 3 of this subparagraph.
 - (III) For a container having a design capacity greater than 0.46 m³ (119 gal.) that is in light material service, the owner or operator shall control air pollutant emissions from the container in accordance with the Container Level 2 standards specified in part 4 of this subparagraph.
 - (ii) When a container having a design capacity greater than 0.1 m³ (26 gal.) is used for treatment of a hazardous waste by a waste stabilization process, the owner or operator shall control air pollutant emissions from the container in accordance with the Container Level 3 standards specified in part 5 of this subparagraph at those times during the waste stabilization process when the hazardous waste in the container is exposed to the atmosphere.
3. Container Level 1 standards.
 - (i) A container using Container Level 1 controls is one of the following:

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- (I) A container that meets the applicable U.S. Department of Transportation (DOT) regulations on packaging hazardous materials for transportation as specified in part 6 of this subparagraph.
 - (II) A container equipped with a cover and closure devices that form a continuous barrier over the container openings such that when the cover and closure devices are secured in the closed position there are no visible holes, gaps, or other open spaces into the interior of the container. The cover may be a separate cover installed on the container (e.g., a lid on a drum or a suitably secured tarp on a roll-off box) or may be an integral part of the container structural design (e.g., a "portable tank" or bulk cargo container equipped with a screw-type cap).
 - (III) An open-top container in which an organic-vapor suppressing barrier is placed on or over the hazardous waste in the container such that no hazardous waste is exposed to the atmosphere. One example of such a barrier is application of a suitable organic-vapor suppressing foam.
- (ii) A container used to meet the requirements of item 3(i)(II) or 3(i)(III) of this subparagraph shall be equipped with covers and closure devices, as applicable to the container, that are composed of suitable materials to minimize exposure of the hazardous waste to the atmosphere and to maintain the equipment integrity, for as long as the container is in service. Factors to be considered in selecting the materials of construction and designing the cover and closure devices shall include: Organic vapor permeability; the effects of contact with the hazardous waste or its vapor managed in the container; the effects of outdoor exposure of the closure device or cover material to wind, moisture, and sunlight; and the operating practices for which the container is intended to be used.
- (iii) Whenever a hazardous waste is in a container using Container Level 1 controls, the owner or operator shall install all covers and closure devices for the container, as applicable to the container, and secure and maintain each closure device in the closed position except as follows:
- (I) Opening of a closure device or cover is allowed for the purpose of adding hazardous waste or other material to the container as follows:
 - I. In the case when the container is filled to the intended final level in one continuous operation, the owner or operator shall promptly secure the closure devices in the closed position and install the covers, as applicable to the container, upon conclusion of the filling operation.
 - II. In the case when discrete quantities or batches of material intermittently are added to the container over a period of time, the owner or operator shall promptly secure the closure devices in the closed position and install covers, as applicable to the container, upon either the container being filled to the intended final level; the completion of a batch loading after which no additional material will be added to the container within 15 minutes; the person performing the loading operation leaving the immediate vicinity of the container; or

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the shutdown of the process generating the material being added to the container, whichever condition occurs first.

- (II) Opening of a closure device or cover is allowed for the purpose of removing hazardous waste from the container as follows:
- I. For the purpose of meeting the requirements of this subparagraph, an empty container as defined in Rule 1200-1-11-.02(1)(g)2 may be open to the atmosphere at any time (i.e., covers and closure devices are not required to be secured in the closed position on an empty container).
 - II. In the case when discrete quantities or batches of material are removed from the container but the container does not meet the conditions to be an empty container as defined in Rule 1200-1-11-.02(1)(g)2, the owner or operator shall promptly secure the closure devices in the closed position and install covers, as applicable to the container, upon the completion of a batch removal after which no additional material will be removed from the container within 15 minutes or the person performing the unloading operation leaves the immediate vicinity of the container, whichever condition occurs first.
- (III) Opening of a closure device or cover is allowed when access inside the container is needed to perform routine activities other than transfer of hazardous waste. Examples of such activities include those times when a worker needs to open a port to measure the depth of or sample the material in the container, or when a worker needs to open a manhole hatch to access equipment inside the container. Following completion of the activity, the owner or operator shall promptly secure the closure device in the closed position or reinstall the cover, as applicable to the container.
- (IV) Opening of a spring-loaded pressure-vacuum relief valve, conservation vent, or similar type of pressure relief device which vents to the atmosphere is allowed during normal operations for the purpose of maintaining the internal pressure of the container in accordance with the container design specifications. The device shall be designed to operate with no detectable organic emissions when the device is secured in the closed position. The settings at which the device opens shall be established such that the device remains in the closed position whenever the internal pressure of the container is within the internal pressure operating range determined by the owner or operator based on container manufacturer recommendations, applicable regulations, fire protection and prevention codes, standard engineering codes and practices, or other requirements for the safe handling of flammable, ignitable, explosive, reactive, or hazardous materials. Examples of normal operating conditions that may require these devices to open are during those times when the internal pressure of the container exceeds the internal pressure operating range for the container as a result of loading operations or diurnal ambient temperature fluctuations.

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- (V) Opening of a safety device, as defined in Rule 1200-1-11-.05(29)(b), is allowed at any time conditions require doing so to avoid an unsafe condition.
 - (iv) The owner or operator of containers using Container Level 1 controls shall inspect the containers and their covers and closure devices as follows:
 - (I) In the case when a hazardous waste already is in the container at the time the owner or operator first accepts possession of the container at the facility and the container is not emptied within 24 hours after the container is accepted at the facility (i.e., does not meet the conditions for an empty container as specified in Rule 1200-1-11-.02(1)(g)2), the owner or operator shall visually inspect the container and its cover and closure devices to check for visible cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position. The container visual inspection shall be conducted on or before the date that the container is accepted at the facility (i.e., the date the container becomes subject to the container standards in paragraph (32) of this Rule). For purposes of this requirement, the date of acceptance is the date of signature that the facility owner or operator enters on Item 20 of the Uniform Hazardous Waste Manifest in the appendix to Rule 1200-1-11-.03 (EPA Forms 8700-22 and 8700-22A), as required under subparagraph (5)(b) of this Rule. If a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of item 3(iv)(III) of this subparagraph.
 - (II) In the case when a container used for managing hazardous waste remains at the facility for a period of 1 year or more, the owner or operator shall visually inspect the container and its cover and closure devices initially and thereafter, at least once every 12 months, to check for visible cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position. If a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of item 3(iv)(III) of this subparagraph.
 - (III) When a defect is detected for the container, cover, or closure devices, the owner or operator shall make first efforts at repair of the defect no later than 24 hours after detection and repair shall be completed as soon as possible but no later than 5 calendar days after detection. If repair of a defect cannot be completed within 5 calendar days, then the hazardous waste shall be removed from the container and the container shall not be used to manage hazardous waste until the defect is repaired.
 - (v) The owner or operator shall maintain at the facility a copy of the procedure used to determine that containers with capacity of 0.46 m³ or greater, which do not meet applicable DOT regulations as specified in part 6 of this subparagraph, are not managing hazardous waste in light material service.
4. Container Level 2 standards.
- (i) A container using Container Level 2 controls is one of the following:

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- (I) A container that meets the applicable U.S. Department of Transportation (DOT) regulations on packaging hazardous materials for transportation as specified in part 6 of this subparagraph.
 - (II) A container that operates with no detectable organic emissions as defined in Rule 1200-1-11-.05(29)(b) and determined in accordance with the procedure specified in part 7 of this subparagraph.
 - (III) A container that has been demonstrated within the preceding 12 months to be vapor-tight by using 40 CFR part 60, appendix A, Method 27 in accordance with the procedure specified in part 8 of this subparagraph.
- (ii) Transfer of hazardous waste in or out of a container using Container Level 2 controls shall be conducted in such a manner as to minimize exposure of the hazardous waste to the atmosphere, to the extent practical, considering the physical properties of the hazardous waste and good engineering and safety practices for handling flammable, ignitable, explosive, reactive, or other hazardous materials. Examples of container loading procedures that the Department considers to meet the requirements of this subpart include using any one of the following: A submerged-fill pipe or other submerged-fill method to load liquids into the container; a vapor-balancing system or a vapor-recovery system to collect and control the vapors displaced from the container during filling operations; or a fitted opening in the top of a container through which the hazardous waste is filled and subsequently purging the transfer line before removing it from the container opening.
- (iii) Whenever a hazardous waste is in a container using Container Level 2 controls, the owner or operator shall install all covers and closure devices for the container, and secure and maintain each closure device in the closed position except as follows:
- (I) Opening of a closure device or cover is allowed for the purpose of adding hazardous waste or other material to the container as follows:
 - I. In the case when the container is filled to the intended final level in one continuous operation, the owner or operator shall promptly secure the closure devices in the closed position and install the covers, as applicable to the container, upon conclusion of the filling operation.
 - II. In the case when discrete quantities or batches of material intermittently are added to the container over a period of time, the owner or operator shall promptly secure the closure devices in the closed position and install covers, as applicable to the container, upon either the container being filled to the intended final level; the completion of a batch loading after which no additional material will be added to the container within 15 minutes; the person performing the loading operation leaving the immediate vicinity of the container; or the shutdown of the process generating the material being added to the container, whichever condition occurs first.

- (II) Opening of a closure device or cover is allowed for the purpose of removing hazardous waste from the container as follows:
- I. For the purpose of meeting the requirements of this subparagraph, an empty container as defined in Rule 1200-1-11-.02(1)(g)2 may be open to the atmosphere at any time (i.e., covers and closure devices are not required to be secured in the closed position on an empty container).
 - II. In the case when discrete quantities or batches of material are removed from the container but the container does not meet the conditions to be an empty container as defined in Rule 1200-1-11-.02(1)(g)2, the owner or operator shall promptly secure the closure devices in the closed position and install covers, as applicable to the container, upon the completion of a batch removal after which no additional material will be removed from the container within 15 minutes or the person performing the unloading operation leaves the immediate vicinity of the container, whichever condition occurs first.
- (III) Opening of a closure device or cover is allowed when access inside the container is needed to perform routine activities other than transfer of hazardous waste. Examples of such activities include those times when a worker need to open a port to measure the depth of or sample the material in the container, or when a worker needs to open a manhole hatch to access equipment inside the container. Following completion of the activity, the owner or operator shall promptly secure the closure device in the closed position or reinstall the cover, as applicable to the container.
- (IV) Opening of a spring-loaded, pressure-vacuum relief valve, conservation vent, or similar type of pressure relief device which vents to the atmosphere is allowed during normal operations for the purpose of maintaining the internal pressure of the container in accordance with the container design specifications. The device shall be designed to operate with no detectable organic emission when the device is secured in the closed position. The settings at which the device opens shall be established such that the device remains in the closed position whenever the internal pressure of the container is within the internal pressure operating range determined by the owner or operator based on container manufacturer recommendations, applicable regulations, fire protection and prevention codes, standard engineering codes and practices, or other requirements for the safe handling of flammable, ignitable, explosive, reactive, or hazardous materials. Examples of normal operating conditions that may require these devices to open are during those times when the internal pressure of the container exceeds the internal pressure operating range for the container as a result of loading operations or diurnal ambient temperature fluctuations.
- (V) Opening of a safety device, as defined in Rule 1200-1-11-.05(29)(b), is allowed at any time conditions require doing so to avoid an unsafe condition.

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(iv) The owner or operator of containers using Container Level 2 controls shall inspect the containers and their covers and closure devices as follows:

- (I) In the case when a hazardous waste already is in the container at the time the owner or operator first accepts possession of the container at the facility and the container is not emptied within 24 hours after the container accepted at the facility (i.e., does not meet the conditions for an empty container as specified in Rule 1200-1-11-.02(1)(g)2), the owner or operator shall visually inspect the container and its cover and closure devices to check for visible cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position. The container visual inspection shall be conducted on or before the date that the container is accepted at the facility (i.e., the date the container becomes subject to the paragraph (32) of this Rule container standards). For purposes of this requirement, the date of acceptance is the date of signature that the facility owner or operator enters on Item 20 of the Uniform Hazardous Waste Manifest in the appendix to Rule 1200-1-11-.03 (EPA Forms 8700-22 and 8700-22A), as required under subparagraph (5)(b) of this Rule. If a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of item 4(iv)(III) of this subparagraph.
- (II) In the case when a container used for managing hazardous waste remains at the facility for a period of 1 year or more, the owner or operator shall visually inspect the container and its cover and closure devices initially and thereafter, at least once every 12 months, to check for visible cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position. If a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of item 4(iv)(III) of this subparagraph.
- (III) When a defect is detected for the container, cover, or closure devices, the owner or operator shall make first efforts at repair of the defect no later than 24 hours after detection, and repair shall be completed as soon as possible but no later than 5 calendar days after detection. If repair of a defect cannot be completed within 5 calendar days, then the hazardous waste shall be removed from the container and the container shall not be used to manage hazardous waste until the defect is repaired.

5. Container Level 3 standards.

- (i) A container using Container Level 3 controls is one of the following:
 - (I) A container that is vented directly through a closed-vent system to a control device in accordance with the requirements of item 5(ii)(II) of this subparagraph.
 - (II) A container that is vented inside an enclosure which is exhausted through a closed-vent system to a control device in accordance with the requirements of item 5(ii)(I) and 5(ii)(II) of this subparagraph.

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- (ii) The owner or operator shall meet the following requirements, as applicable to the type of air emission control equipment selected by the owner or operator:
 - (I) The container enclosure shall be designed and operated in accordance with the criteria for a permanent total enclosure as specified in ``Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure" under 40 CFR 52.741, appendix B. The enclosure may have permanent or temporary openings to allow worker access; passage of containers through the enclosure by conveyor or other mechanical means; entry of permanent mechanical or electrical equipment; or direct airflow into the enclosure. The owner or operator shall perform the verification procedure for the enclosure as specified in Section 5.0 to ``Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure" initially when the enclosure is first installed and, thereafter, annually.
 - (II) The closed-vent system and control device shall be designed and operated in accordance with the requirements of subparagraph (h) of this paragraph.
 - (iii) Safety devices, as defined in Rule 1200-1-11-.05(29)(b), may be installed and operated as necessary on any container, enclosure, closed-vent system, or control device used to comply with the requirements of subpart 5(i) of this subparagraph.
 - (iv) Owners and operators using Container Level 3 controls in accordance with the provisions of this subpart shall inspect and monitor the closed-vent systems and control devices as specified in subparagraph (h) of this paragraph.
 - (v) Owners and operators that use Container Level 3 controls in accordance with the provisions of this subpart shall prepare and maintain the records specified in part (j)4 of this paragraph.
 - (vi) Transfer of hazardous waste in or out of a container using Container Level 3 controls shall be conducted in such a manner as to minimize exposure of the hazardous waste to the atmosphere, to the extent practical, considering the physical properties of the hazardous waste and good engineering and safety practices for handling flammable, ignitable, explosive , reactive, or other hazardous materials. Examples of container loading procedures that the Department considers to meet the requirements of this subpart include using any one of the following: A submerged-fill pipe or other submerged-fill method to load liquids into the container; a vapor-balancing system or a vapor-recovery system to collect and control the vapors displaced from the container during filling operation; or a fitted opening in the top of a container through which the hazardous waste is filled and subsequently purging the transfer line before removing it from the container opening.
6. For the purpose of compliance with item 3(i)(I) or 4(i)(I) of this subparagraph, containers shall be used that meet the applicable U.S. Department of Transportation (DOT) regulations on packaging hazardous materials for transportation as follows:
- (i) The container meets the applicable requirements specified in 49 CFR part 178--Specifications for Packaging or 49 CFR part 179--Specifications for Tank Cars.

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- (ii) Hazardous waste is managed in the container in accordance with the applicable requirements specified in 49 CFR part 107, subpart B--Exemptions; 49 CFR part 172--Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements; 49 CFR part 173--Shippers--General Requirements for Shipments and Packages; and 49 CFR part 180--Continuing Qualification and Maintenance of Packagings.
 - (iii) For the purpose of complying with this paragraph, no exceptions to the 49 CFR part 178 or part 179 regulations are allowed except as provided for in subpart 6(iv) of this subparagraph.
 - (iv) For a lab pack that is managed in accordance with the requirements of 49 CFR part 178 for the purpose of complying with this paragraph, an owner or operator may comply with the exceptions for combination packagings specified in 49 CFR 173.12(b).
- 7. To determine compliance with the no detectable organic emissions requirement of item 4(i)(II) of this subparagraph, the procedure specified in part (d)4 of this paragraph shall be used.
 - (i) Each potential leak interface (i.e., a location where organic vapor leakage could occur) on the container, its cover, and associated closure devices, as applicable to the container, shall be checked. Potential leak interfaces that are associated with containers include, but are not limited to: The interface of the cover rim and the container wall; the periphery of any opening on the container or container cover and its associated closure device; and the sealing seat interface on a spring-loaded pressure-relief valve.
 - (ii) The test shall be performed when the container is filled with a material having a volatile organic concentration representative of the range of volatile organic concentrations for the hazardous wastes expected to be managed in this type of container. During the test, the container cover and closure devices shall be secured in the closed position.
- 8. Procedure for determining a container to be vapor-tight using Method 27 of 40 CFR part 60, appendix A for the purpose of complying with item 4(i)(III) of this subparagraph.
 - (i) The test shall be performed in accordance with Method 27 of 40 CFR part 60, Appendix A.
 - (ii) A pressure measurement device shall be used that has a precision of ± 2.5 mm water and that is capable of measuring above the pressure at which the container is to be tested for vapor tightness.
 - (iii) If the test results determined by Method 27 indicate that the container sustains a pressure change less than or equal to 750 Pascals within 5 minutes after it is pressurized to a minimum of 4,500 Pascals, then the container is determined to be vapor-tight.
- (h) Standards: Closed-vent Systems and Control Devices [40 CFR 264.1087]

1. This subparagraph applies to each closed-vent system and control device installed and operated by the owner or operator to control air emissions in accordance with standards of this paragraph.
2. The closed-vent system shall meet the following requirements:
 - (i) The closed-vent system shall route the gases, vapors, and fumes emitted from the hazardous waste in the waste management unit to a control device that meets the requirements specified in part 3 of this subparagraph.
 - (ii) The closed-vent system shall be designed and operated in accordance with the requirements specified in subparagraph (30)(d) of this Rule.
 - (iii) In the case when the closed-vent system includes bypass devices that could be used to divert the gas or vapor stream to the atmosphere before entering the control device, each bypass device shall be equipped with either a flow indicator as specified in item 2(iii)(I) of this subparagraph or a seal or locking device as specified in item 2(iii)(II) of this subparagraph. For the purpose of complying with this subpart, low leg drains, high point bleeds, analyzer vents, open-ended valves or lines, spring loaded pressure relief valves, and other fittings used for safety purposes are not considered to be bypass devices.
 - (I) If a flow indicator is used to comply with subpart 2(iii) of this subparagraph, the indicator shall be installed at the inlet to the bypass line used to divert gases and vapors from the closed-vent system to the atmosphere at a point upstream of the control device inlet. For this item, a flow indicator means a device which indicates the presence of either gas or vapor flow in the bypass line.
 - (II) If a seal or locking device is used to comply with subpart 2(iii) of this subparagraph, the device shall be placed on the mechanism by which the bypass device position is controlled (e.g., valve handle, damper lever) when the bypass device is in the closed position such that the bypass device cannot be opened without breaking the seal or removing the lock. Examples of such devices include, but are not limited to, a car-seal or a lock-and-key configuration valve. The owner or operator shall visually inspect the seal or closure mechanism at least once every month to verify that the bypass mechanism is maintained in the closed position.
 - (iv) The closed-vent system shall be inspected and monitored by the owner or operator in accordance with the procedure specified in part (30)(d)12 of this Rule.
3. The control device shall meet the following requirements:
 - (i) The control device shall be one of the following devices:
 - (I) A control device designed and operated to reduce the total organic content of the inlet vapor stream vented to the control device by at least 95 percent by weight;
 - (II) An enclosed combustion device designed and operated in accordance with the requirements of part (30)(d)3 of this Rule; or

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- (III) A flare designed and operated in accordance with the requirements of part (30)(d)4 of this Rule.
- (ii) The owner or operator who elects to use a closed-vent system and control device to comply with the requirements of this subparagraph shall comply with the requirements specified in item 3(ii)(I) through 3(ii)(VI) of this subparagraph.
 - (I) Periods of planned routine maintenance of the control device, during which the control device does not meet the specifications of items 3(i)(I), 3(i)(II), or 3(i)(III) of this subparagraph, as applicable, shall not exceed 240 hours per year.
 - (II) The specifications and requirements in items 3(i)(I), 3(i)(II), and 3(i)(III) of this subparagraph for control devices do not apply during periods of planned routine maintenance.
 - (III) The specifications and requirements in items 3(i)(I), 3(i)(II), and 3(i)(III) of this subparagraph for control devices do not apply during a control device system malfunction.
 - (IV) The owner or operator shall demonstrate compliance with the requirements of item 3(ii)(I) of this subparagraph (i.e., planned routine maintenance of a control device, during which the control device does not meet the specifications of items 3(i)(I), 3(i)(II), or 3(i)(III) of this subparagraph, as applicable, shall not exceed 240 hours per year) by recording the information specified in item (j)5(i)(V) of this paragraph.
 - (V) The owner or operator shall correct control device system malfunctions as soon as practicable after their occurrence in order to minimize excess emissions of air pollutants.
 - (VI) The owner or operator shall operate the closed-vent system such that gases, vapors, or fumes are not actively vented to the control device during periods of planned maintenance or control device system malfunction (i.e., periods when the control device is not operating or not operating normally) except in cases when it is necessary to vent the gases, vapors, and/or fumes to avoid an unsafe condition or to implement malfunction corrective actions or planned maintenance actions.
- (iii) The owner or operator using a carbon adsorption system to comply with subpart 3(i) of this subparagraph shall operate and maintain the control device in accordance with the following requirements:
 - (I) Following the initial startup of the control device, all activated carbon in the control device shall be replaced with fresh carbon on a regular basis in accordance with the requirements of part (30)(d)7 or 8 of this Rule.
 - (II) All carbon that is a hazardous waste and that is removed from the control device shall be managed in accordance with the requirements of

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part (30)(d)14 of this Rule, regardless of the average volatile organic concentration of the carbon.

- (iv) An owner or operator using a control device other than a thermal vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system to comply with subpart 3(i) of this subparagraph shall operate and maintain the control device in accordance with the requirements of part (30)(d)10 of this Rule.
- (v) The owner or operator shall demonstrate that a control device achieves the performance requirements of subpart 3(i) of this subparagraph as follows:
 - (I) An owner or operator shall demonstrate using either a performance test as specified in item 3(v)(III) of this subparagraph or a design analysis as specified in item 3(v)(IV) of this subparagraph the performance of each control device except for the following:
 - I. A flare;
 - II. A boiler or process heater with a design heat input capacity of 44 megawatts or greater;
 - III. A boiler or process heater into which the vent stream is introduced with the primary fuel;
 - IV. A boiler or industrial furnace burning hazardous waste for which the owner or operator has been issued a final permit under Rule 1200-1-11-.07 and has designed and operates the unit in accordance with the requirements of Rule 1200-1-11-.09(8); or
 - V. A boiler or industrial furnace burning hazardous waste for which the owner or operator has designed and operates in accordance with the interim status requirements of Rule 1200-1-11-.09(8).
 - (II) An owner or operator shall demonstrate the performance of each flare in accordance with the requirements specified in part (30)(d)5.
 - (III) For a performance test conducted to meet the requirements of item 3(v)(I) of this subparagraph, the owner or operator shall use the test methods and procedures specified in subpart (30)(e)3(i) through (3)(iv).
 - (IV) For a design analysis conducted to meet the requirements of item 3(v)(I) of this subparagraph, the design analysis shall meet the requirements specified in item (3)(f)2(iv)(III) of this Rule.
 - (V) The owner or operator shall demonstrate that a carbon adsorption system achieves the performance requirements of subpart 3(i) of this subparagraph based on the total quantity of organics vented to the atmosphere from all carbon adsorption system equipment that is used for organic adsorption, organic desorption or carbon regeneration, organic recovery, and carbon disposal.

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- (vi) If the owner or operator and the Commissioner do not agree on a demonstration of control device performance using a design analysis then the disagreement shall be resolved using the results of a performance test performed by the owner or operator in accordance with the requirements of item 3(v)(III) of this subparagraph. The Commissioner may choose to have an authorized representative observe the performance test.
 - (vii) The closed-vent system and control device shall be inspected and monitored by the owner or operator in accordance with the procedures specified in subpart (30)(d)6(ii) and part (30)(d)12 of this Rule. The readings from each monitoring device required by subpart (30)(d)6(ii) of this Rule shall be inspected at least once each operating day to check control device operation. Any necessary corrective measures shall be immediately implemented to ensure the control device is operated in compliance with the requirements of this subparagraph.
- (i) Inspection and Monitoring Requirements [40 CFR 264.1088]
 - 1. The owner or operator shall inspect and monitor air emission control equipment used to comply with this paragraph in accordance with the applicable requirements specified in subparagraph (e) through (h) of this paragraph.
 - 2. The owner or operator shall develop and implement a written plan and schedule to perform the inspections and monitoring required by part 1 of this subparagraph. The owner or operator shall incorporate this plan and schedule into the facility inspection plan required under subparagraph (2)(f) of this Rule.
- (j) Recordkeeping Requirements [40 CFR 264.1089]
 - 1. Each owner or operator of a facility subject to requirements of this paragraph shall record and maintain the information specified in parts 2 through 10 of this subparagraph, as applicable to the facility. Except for air emission control equipment design documentation and information required by parts 9 and 10 of this subparagraph, records required by this subparagraph shall be maintained in the operating record for a minimum of 3 years. Air emission control equipment design documentation shall be maintained in the operating record until the air emission control equipment is replaced or otherwise no longer in service. Information required by parts 9 and 10 of this subparagraph shall be maintained in the operating record for as long as the waste management unit is not using air emission controls specified in subparagraphs (e) through (h) of this paragraph in accordance with the conditions specified in part (a)4 or subpart (a)2(vii) of this paragraph.
 - 2. The owner or operator of a tank using air emission controls in accordance with the requirements of subparagraph (e) of this paragraph shall prepare and maintain records for the tank that include the following information:
 - (i) For each tank using air emission controls in accordance with the requirements of subparagraph (e) of this paragraph, the owner or operator shall record:
 - (I) A tank identification number (or other unique identification description as selected by the owner or operator).
 - (II) A record for each inspection required by subparagraph (e) of this paragraph that includes the following information:

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- I. Date inspection was conducted.
 - II. For each defect detected during the inspection: The location of the defect, a description of the defect, the date of detection, and corrective action taken to repair the defect. In the event that repair of the defect is delayed in accordance with the requirements of subparagraph (e) of this paragraph, the owner or operator shall also record the reason for the delay and the date that completion of repair of the defect is expected.
- (ii) In addition to the information required by subpart 2(i) of this subparagraph, the owner or operator shall record the following information, as applicable to the tank:
- (I) The owner or operator using a fixed roof to comply with the Tank Level 1 control requirements specified in part (e)3 of this paragraph shall prepare and maintain records for each determination for the maximum organic vapor pressure of the hazardous waste in the tank performed in accordance with the requirements of part (e)3 of this paragraph. The records shall include the date and time the samples were collected, the analysis method used, and the analysis results.
 - (II) The owner or operator using an internal floating roof to comply with the Tank Level 2 control requirements specified in part (e)4 of this paragraph shall prepare and maintain documentation describing the floating roof design.
 - (III) Owners and operators using an external floating roof to comply with the Tank Level 2 control requirements specified in part (e)6 of this paragraph shall prepare and maintain the following records:
 - I. Documentation describing the floating roof design and the dimensions of the tank.
 - II. Records for each seal gap inspection required by subpart (e)6(iii) of this paragraph describing the results of the seal gap measurements. The records shall include the date that the measurements were performed, the raw data obtained for the measurements, and the calculations of the total gap surface area. In the event that the seal gap measurements do not conform to the specifications in subpart (e)6(i) of this paragraph, the records shall include a description of the repairs that were made, the date the repairs were made, and the date the tank was emptied, if necessary.
 - (IV) Each owner or operator using an enclosure to comply with the Tank Level 2 control requirements specified in part (e)9 of this paragraph shall prepare and maintain the following records:
 - I. Records for the most recent set of calculations and measurements performed by the owner or operator to verify that the enclosure meets the criteria of a permanent total enclosure as specified in ``Procedure T--Criteria for and

Verification of a Permanent or Temporary Total Enclosure" under 40 CFR 52.741, appendix B.

- II. Records required for the closed-vent system and control device in accordance with the requirements of part 5 of this subparagraph.
3. The owner or operator of a surface impoundment using air emission controls in accordance with the requirements of subparagraph (f) of this paragraph shall prepare and maintain records for the surface impoundment that include the following information:
- (i) A surface impoundment identification number (or other unique identification description as selected by the owner or operator).
 - (ii) Documentation describing the floating membrane cover or cover design, as applicable to the surface impoundment, that includes information prepared by the owner or operator or provided by the cover manufacturer or vendor describing the cover design, and certification by the owner or operator that the cover meets the specifications listed in part (f)3 of this paragraph.
 - (iii) A record for each inspection required by subparagraph (f) of this paragraph that includes the following information:
 - (I) Date inspection was conducted.
 - (II) For each defect detected during the inspection the following information: The location of the defect, a description of the defect, the date of detection, and corrective action taken to repair the defect. In the event that repair of the defect is delayed in accordance with the provisions of part (f)6 of this paragraph, the owner or operator shall also record the reason for the delay and the date that completion of repair of the defect is expected.
 - (iv) For a surface impoundment equipped with a cover and vented through a closed-vent system to a control device, the owner or operator shall prepare and maintain the records specified in part 5 of this subparagraph.
4. The owner or operator of containers using Container Level 3 air emission controls in accordance with the requirements of subparagraph (g) of this paragraph shall prepare and maintain records that include the following information:
- (i) Records for the most recent set of calculations and measurements performed by the owner or operator to verify that the enclosure meets the criteria of a permanent total enclosure as specified in ``Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure" under 40 CFR 52.741, appendix B.
 - (ii) Records required for the closed-vent system and control device in accordance with the requirements of part 5 of this subparagraph.
5. The owner or operator using a closed-vent system and control device in accordance with the requirements of subparagraph (h) of this paragraph shall prepare and maintain records that include the following information:

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(i) Documentation for the closed-vent system and control device that includes:

- (I) Certification that is signed and dated by the owner or operator stating that the control device is designed to operate at the performance level documented by a design analysis as specified in item 5(i)(II) of this subparagraph or by performance tests as specified in item 5(i)(III) of this subparagraph when the tank, surface impoundment, or container is or would be operating at capacity or the highest level reasonably expected to occur.
- (II) If a design analysis is used, then design documentation as specified in subpart (30)(f)2(iv) of this Rule. The documentation shall include information prepared by the owner or operator or provided by the control device manufacturer or vendor that describes the control device design in accordance with item (30)(f)2(iv)(III) of this Rule and certification by the owner or operator that the control equipment meets the applicable specifications.
- (III) If performance tests are used, then a performance test plan as specified in subpart (30)(f)2(iii) and all test results.
- (IV) Information as required by subpart (30)(f)3(i) and (ii) of this Rule, as applicable.
- (V) An owner or operator shall record, on a semiannual basis, the information specified in subitems 5(i)(V)I and 5(i)(V)II of this subparagraph for those planned routine maintenance operations that would require the control device not to meet the requirements of item (h)3(i)(I), 3(i)(II), or 3(i)(III) of this paragraph, as applicable.
 - I. A description of the planned routine maintenance that is anticipated to be performed for the control device during the next 6- month period. This description shall include the type of maintenance necessary, planned frequency of maintenance, and lengths of maintenance periods.
 - II. A description of the planned routine maintenance that was performed for the control device during the previous 6-month period. This description shall include the type of maintenance performed and the total number of hours during those 6 months that the control device did not meet the requirements of item (h)3(i)(I), 3(i)(II), or 3(i)(III) of this paragraph, as applicable, due to planned routine maintenance.
- (VI) An owner or operator shall record the information specified in subitems 5(i)(VI)I through 5(i)(VI)III of this subparagraph for those unexpected control device system malfunctions that would require the control device not to meet the requirements of item (h)3(i)(I), 3(i)(II), or 3(i)(III) of this paragraph, as applicable.
 - I. The occurrence and duration of each malfunction of the control device system.

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- II. The duration of each period during a malfunction when gases, vapors, or fumes are vented from the waste management unit through the closed-vent system to the control device while the control device is not properly functioning.
 - III. Actions taken during periods of malfunction to restore a malfunctioning control device to its normal or usual manner of operation.
- (VII) Records of the management of carbon removed from a carbon adsorption system conducted in accordance with item (h)3(iii)(II) of this paragraph.
6. The owner or operator of a tank, surface impoundment, or container exempted from standards in accordance with the provisions of part (c)3 of this paragraph shall prepare and maintain the following records, as applicable:
- (i) For tanks, surface impoundments, and containers exempted under the hazardous waste organic concentration conditions specified in subpart (c)3(i) or items (c)(ii)(I) through (VI) of this paragraph, the owner or operator shall record the information used for each waste determination (e.g., test results, measurements, calculations, and other documentation) in the facility operating log. If analysis results for waste samples are used for the waste determination, then the owner or operator shall record the date, time, and location that each waste sample is collected in accordance with applicable requirements of subparagraph (d) of this paragraph.
 - (ii) For tanks, surface impoundments, or containers exempted under the provisions of item (c)3(ii)(VII) or (c)3(ii)(VIII) of this paragraph, the owner or operator shall record the identification number for the incinerator, boiler, or industrial furnace in which the hazardous waste is treated.
7. An owner or operator designating a cover as "unsafe to inspect and monitor" pursuant to part (e)12 or (f)7 of this paragraph shall record in a log that is kept in the facility operating record the following information: The identification numbers for waste management units with covers that are designated as "unsafe to inspect and monitor," the explanation for each cover stating why the cover is unsafe to inspect and monitor, and the plan and schedule for inspecting and monitoring each cover.
8. The owner or operator of a facility that is subject to this paragraph and to the control device standards in 40 CFR part 60, subpart VV, or 40 CFR part 61, subpart V, may elect to demonstrate compliance with the applicable sections of this paragraph by documentation either pursuant to this paragraph, or pursuant to the provisions of 40 CFR part 60, subpart VV or 40 CFR part 61, subpart V, to the extent that the documentation required by 40 CFR parts 60 or 61 duplicates the documentation required by this subparagraph.
9. For each tank or container not using air emission controls specified in subparagraphs (e) through (h) of this paragraph in accordance with the conditions specified in part (a)4 of this paragraph, the owner or operator shall record and maintain the following information:
- (i) A list of the individual organic peroxide compounds manufactured at the facility that meet the conditions specified in subpart (a)4(i) of this paragraph.

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- (ii) A description of how the hazardous waste containing the organic peroxide compounds identified in subpart 9(i) of this subparagraph are managed at the facility in tanks and containers. This description shall include:
 - (I) For the tanks used at the facility to manage this hazardous waste, sufficient information shall be provided to describe for each tank: A facility identification number for the tank; the purpose and placement of this tank in the management train of this hazardous waste; and the procedures used to ultimately dispose of the hazardous waste managed in the tanks.
 - (II) For containers used at the facility to manage these hazardous wastes, sufficient information shall be provided to describe: A facility identification number for the container or group of containers; the purpose and placement of this container, or group of containers, in the management train of this hazardous waste; and the procedures used to ultimately dispose of the hazardous waste handled in the containers.
 - (iii) An explanation of why managing the hazardous waste containing the organic peroxide compounds identified in subpart 9(i) of this subparagraph in the tanks and containers as described in subpart 9(ii) of this subparagraph would create an undue safety hazard if the air emission controls, as required under subparagraph (e) through (h) of this paragraph, are installed and operated on these waste management units. This explanation shall include the following information:
 - (I) For tanks used at the facility to manage these hazardous wastes, sufficient information shall be provided to explain: How use of the required air emission controls on the tanks would affect the tank design features and facility operating procedures currently used to prevent an undue safety hazard during the management of this hazardous waste in the tanks; and why installation of safety devices on the required air emission controls, as allowed under this paragraph, will not address those situations in which evacuation of tanks equipped with these air emission controls is necessary and consistent with good engineering and safety practices for handling organic peroxides.
 - (II) For containers used at the facility to manage these hazardous wastes, sufficient information shall be provided to explain: How use of the required air emission controls on the containers would affect the container design features and handling procedures currently used to prevent an undue safety hazard during the management of this hazardous waste in the containers; and why installation of safety devices on the required air emission controls, as allowed under this subpart, will not address those situations in which evacuation of containers equipped with these air emission controls is necessary and consistent with good engineering and safety practices for handling organic peroxides.
10. For each hazardous waste management unit not using air emission controls specified in subparagraph (e) through (h) of this paragraph in accordance with the requirements of subpart (a)2(vii) of this paragraph, the owner or operator shall record and maintain the following information:

- (i) Certification that the waste management unit is equipped with and operating air emission controls in accordance with the requirements of an applicable Clean Air Act regulation codified under 40 CFR part, 60, part 61, or part 63.
 - (ii) Identification of the specific requirements codified under 40 CFR part 60, part 61, or part 63 with which the waste management unit is in compliance.
- (k) Reporting Requirements [40 CFR 264.1090]
 - 1. Each owner or operator managing hazardous waste in a tank, surface impoundment, or container exempted from using air emission controls under the provisions of part (c)3 of this paragraph shall report to the Commissioner each occurrence when hazardous waste is placed in the waste management unit in noncompliance with the conditions specified in subpart (c)3(i) or 3(ii) of this paragraph, as applicable. Examples of such occurrences include placing in the waste management unit a hazardous waste having an average VO concentration equal to or greater than 500 ppmw at the point of waste origination; or placing in the waste management unit a treated hazardous waste of which the organic content has been reduced by an organic destruction or removal process that fails to achieve the applicable conditions specified in items (c)3(ii)(I) through 3(ii)(VI) of this paragraph. The owner or operator shall submit a written report within 15 calendar days of the time that the owner or operator becomes aware of the occurrence. The written report shall contain the Installation Identification Number, facility name and address, a description of the noncompliance event and the cause, the dates of the noncompliance, and the actions taken to correct the noncompliance and prevent recurrence of the noncompliance. The report shall be signed and dated by an authorized representative of the owner or operator.
 - 2. Each owner or operator using air emission controls on a tank in accordance with the requirements of part (e)3 of this paragraph shall report to the Commissioner each occurrence when hazardous waste is managed in the tank in noncompliance with the conditions specified in part (e)2 of this paragraph. The owner or operator shall submit a written report within 15 calendar days of the time that the owner or operator becomes aware of the occurrence. The written report shall contain the Installation Identification Number, facility name and address, a description of the noncompliance event and the cause, the dates of the noncompliance, and the actions taken to correct the noncompliance and prevent recurrence of the noncompliance. The report shall be signed and dated by an authorized representative of the owner or operator.
 - 3. Each owner or operator using a control device in accordance with the requirements of subparagraph (h) of this paragraph shall submit a semiannual written report to the Commissioner except as provided for in part 4 of this subparagraph. The report shall describe each occurrence during the previous 6 - month period when either:
 - (i) A control device is operated continuously for 24 hours or longer in noncompliance with the applicable operating values defined in subpart (30)(f)3(iv) of this Rule; or
 - (ii) A flare is operated with visible emissions for 5 minutes or longer in a two hour period, as defined in part (30)(d)4 of this Rule.

The written report shall include the Installation Identification Number, facility name and address, and an explanation why the control device could not be returned to compliance within 24 hours, and actions taken to correct the noncompliance. The report shall be signed and dated by an authorized representative of the owner or operator.

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4. A report to the Commissioner in accordance with the requirements of part 3 of this subparagraph is not required for a 6 - month period during which all control devices subject to this paragraph are operated by the owner or operator such that;
 - (i) During no period of 24 hours or longer did a control device operate continuously in noncompliance with the applicable operating values defined in subpart (30)(f)3(iv) of this Rule; and
 - (ii) No flare was operated with visible emissions for 5 minutes or longer in a two hour period as defined in part (3)(d)4 of this Rule.
- (l) (RESERVED) [40 CFR 264.1091]
- (33) Containment Buildings [40 CFR 264 Subpart DD]
 - (a) Applicability [40 CFR 264.1100]

The requirements of this subpart apply to owners or operators who store or treat hazardous waste in units designed and operated under subparagraph (b) of this paragraph. These provisions will become effective on February 18, 1993, although owner or operator may notify the Commissioner of his intent to be bound by this paragraph at an earlier time. The owner or operator is not subject to the definition of land disposal in Rule 1200-1-11-.01(2)(a) provided that the unit:

 1. Is a completely enclosed, self-supporting structure that is designed and constructed of manmade materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit, and to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the hazardous wastes to which they are exposed; climatic conditions; and the stresses of daily operation, including the movement of heavy equipment within the unit and contact of such equipment with containment walls;
 2. Has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel, wastes, and handling equipment within the unit;
 3. If the unit is used to manage liquids, has:
 - (i) A primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier;
 - (ii) A liquid collection system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier; and
 - (iii) A secondary containment system designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time, unless the unit has been granted a variance from the secondary containment system requirements under subpart (b)2(iv) of this paragraph;
 4. Has controls sufficient to prevent fugitive dust emissions to meet the no visible emission standard in item (b)3(i)(IV) of this paragraph; and
 5. Is designed and operated to ensure containment and prevent the tracking of materials from the unit by personnel or equipment.
 - (b) Design and Operating Standards [40 CFR 264.1101]

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1. All containment buildings must comply with the following design standards:
 - (i) The containment building must be completely enclosed with a floor, walls, and a roof to prevent exposure to the elements, (e.g., precipitation, wind, run-on), and to assure containment of managed wastes.
 - (ii) The floor and containment walls of the unit, including the secondary containment system if required under part 2 of this subparagraph, must be designed and constructed of materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit, and to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the hazardous wastes to which they are exposed; climatic conditions; and the stresses of daily operation, including the movement of heavy equipment within the unit and contact of such equipment with containment walls. The unit must be designed so that it has sufficient structural strength to prevent collapse or other failure. All surfaces to be in contact with hazardous wastes must be chemically compatible with those wastes. The Commissioner will consider standards established by professional organizations generally recognized by the industry such as the American Concrete Institute (ACI) and the American Society of Testing Materials (ASTM) in judging the structural integrity requirements of this paragraph. If appropriate to the nature of the waste management operation to take place in the unit, an exception to the structural strength requirement may be made for light-weight doors and windows that meet these criteria:
 - (I) They provide an effective barrier against fugitive dust emissions under item (b)3(i)(IV) of this paragraph; and
 - (II) The unit is designed and operated in a fashion that assures that wastes will not actually come in contact with these openings.
 - (iii) Incompatible hazardous wastes or treatment reagents must not be placed in the unit or its secondary containment system if they could cause the unit or secondary containment system to leak, corrode, or otherwise fail.
 - (iv) A containment building must have a primary barrier designed to withstand the movement of personnel, waste, and handling equipment in the unit during the operating life of the unit and appropriate for the physical and chemical characteristics of the waste to be managed.
2. For a containment building used to manage hazardous wastes containing free liquids or treated with free liquids (the presence of which is determined by the paint filter test, a visual examination, or other appropriate means), the owner or operator must include:
 - (i) A primary barrier designed and constructed of materials to prevent the migration of hazardous constituents into the barrier (e.g., a geomembrane covered by a concrete wear surface).
 - (ii) A liquid collection and removal system to minimize the accumulation of liquid on the primary barrier of the containment building:
 - (I) The primary barrier must be sloped to drain liquids to the associated collection system; and

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- (II) Liquids and waste must be collected and removed to minimize hydraulic head on the containment system at the earliest practicable time.
- (iii) A secondary containment system including a secondary barrier designed and constructed to prevent migration of hazardous constituents into the barrier, and a leak detection system that is capable of detecting failure of the primary barrier and collecting accumulated hazardous wastes and liquids at the earliest practicable time.
 - (I) The requirements of the leak detection component of the secondary containment system are satisfied by installation of a system that is, at a minimum:
 - I. Constructed with a bottom slope of 1 percent or more; and
 - II. Constructed of a granular drainage material with a hydraulic conductivity of 1×10^{-2} cm/sec or more and a thickness of 12 inches (30.5 cm) or more, or constructed of synthetic or geonet drainage materials with a transmissivity of 3×10^{-5} m²/sec or more.
 - (II) If treatment is to be conducted in the building, an area in which such treatment will be conducted must be designed to prevent the release of liquids, wet materials, or liquid aerosols to other portions of the building.
 - (III) The secondary containment system must be constructed of materials that are chemically resistant to the waste and liquids managed in the containment building and of sufficient strength and thickness to prevent collapse under the pressure exerted by overlaying materials and by any equipment used in the containment building. (Containment buildings can serve as secondary containment systems for tanks placed within the building under certain conditions. A containment building can serve as an external liner system for a tank, provided it meets the requirements of subpart (10)(d)4(i) of this Rule. In addition, the containment building must meet the requirements of part (10)(d)2 and subparts (10)(d)3(i) and (ii) of this Rule to be considered an acceptable secondary containment system for a tank.)
- (iv) For existing units other than 90-day generator units, the Commissioner may delay the secondary containment requirement for up to two years, based on a demonstration by the owner or operator that the unit substantially meets the standards of this paragraph. In making this demonstration, the owner or operator must:
 - (I) Provide written notice to the Commissioner of their request by November 16, 1992. This notification must describe the unit and its operating practices with specific reference to the performance of existing containment systems, and specific plans for retrofitting the unit with secondary containment;

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- (II) Respond to any comments from the Commissioner on these plans within 30 days; and
 - (III) Fulfill the terms of the revised plans, if such plans are approved by the Commissioner.
3. Owners or operators of all containment buildings must:
- (i) Use controls and practices to ensure containment of the hazardous waste within the unit; and, at a minimum:
 - (I) Maintain the primary barrier to be free of significant cracks, gaps, corrosion, or other deterioration that could cause hazardous waste to be released from the primary barrier;
 - (II) Maintain the level of the stored/treated hazardous waste within the containment walls of the unit so that the height of any containment wall is not exceeded;
 - (III) Take measures to prevent the tracking of hazardous waste out of the unit by personnel or by equipment used in handling the waste. An area must be designated to decontaminate equipment and any rinsate must be collected and properly managed; and
 - (IV) Take measures to control fugitive dust emissions such that any openings (doors, windows, vents, cracks, etc.) exhibit no visible emissions (see 40 CFR part 60, appendix A, Method 22-Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares). In addition, all associated particulate collection devices (e.g., fabric filter, electrostatic precipitator) must be operated and maintained with sound air pollution control practices (see 40 CFR part 60 subpart 292 for guidance). This state of no visible emissions must be maintained effectively at all times during routine operating and maintenance conditions, including when vehicles and personnel are entering and exiting the unit.
 - (ii) Obtain certification by a qualified registered professional engineer that the containment building design meets the requirements of parts 1 through 3 of this subparagraph. For units placed into operation prior to February 18, 1993, this certification must be placed in the facility's operating record (on-site files for generators who are not formally required to have operating records) no later than 60 days after the date of initial operation of the unit. After February 18, 1993, PE certification will be required prior to operation of the unit.
 - (iii) Throughout the active life of the containment building, if the owner or operator detects a condition that could lead to or has caused a release of hazardous waste, must repair the condition promptly, in accordance with the following procedures.
 - (I) Upon detection of a condition that has lead to a release of hazardous waste (e.g., upon detection of leakage from the primary barrier) the owner or operator must:
 - I. Enter a record of the discovery in the facility operating record;

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- II. Immediately remove the portion of the containment building affected by the condition from service;
 - III. Determine what steps must be taken to repair the containment building, remove any leakage from the secondary collection system, and establish a schedule for accomplishing the cleanup and repairs; and
 - IV. Within 7 days after the discovery of the condition, notify the Commissioner of the condition, and within 14 working days, provide a written notice to the Commissioner with a description of the steps taken to repair the containment building, and the schedule for accomplishing the work.
- (II) The Commissioner will review the information submitted, make a determination regarding whether the containment building must be removed from service completely or partially until repairs and cleanup are complete, and notify the owner or operator of the determination and the underlying rationale in writing.
- (III) Upon completing all repairs and cleanup the owner or operator must notify the Commissioner in writing and provide a verification, signed by a qualified, registered professional engineer, that the repairs and cleanup have been completed according to the written plan submitted in accordance with subitem (I)IV of this subpart.
- (iv) Inspect and record in the facility's operating record, at least once every seven days, data gathered from monitoring equipment and leak detection equipment as well as the containment building and the area immediately surrounding the containment building to detect signs of releases of hazardous waste.
4. For containment buildings that contain areas both with and without secondary containment, the owner or operator must:
- (i) Design and operate each area in accordance with the requirements enumerated in parts 1 through 3 of this subparagraph;
 - (ii) Take measures to prevent the release of liquids or wet materials into areas without secondary containment; and
 - (iii) Maintain in the facility's operating log a written description of the operating procedures used to maintain the integrity of areas without secondary containment.
5. Notwithstanding any other provision of this paragraph the Commissioner may waive requirements for secondary containment for a permitted containment building where the owner operator demonstrates that the only free liquids in the unit are limited amounts of dust suppression liquids required to meet occupational health and safety requirements, and where containment of managed wastes and liquids can be assured without a secondary containment system.
- (c) Closure and Post-closure Care [40 CFR 264.1102]

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1. At closure of a containment building, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components (liners, etc.) contaminated subsoils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous waste unless Rule 1200-1-11-.02(1)(c)4 applies. The closure plan, closure activities, cost estimates for closure, and financial responsibility for containment buildings must meet all of the requirements specified in paragraphs (7) and (8) of this Rule.
2. If, after removing or decontaminating all residues and making all reasonable efforts to effect removal or decontamination of contaminated components, subsoils, structures, and equipment as required in part 1 of this subparagraph, the owner or operator finds that not all contaminated subsoils can be practicably removed or decontaminated, he must close the facility and perform post-closure care in accordance with the closure and post-closure requirements that apply to landfills (subparagraph (14)(k) of this Rule). In addition, for the purposes of closure, post-closure, and financial responsibility, such a containment building is then considered to be a landfill, and the owner or operator must meet all of the requirements for landfills specified in paragraphs (7) and (8) of this Rule.

(d)-(k) (RESERVED) [40 CFR 264.1103-264.1110]

(34) Hazardous Waste Munitions and Explosives Storage [40 CFR 264 Subpart EE]

(a) Applicability [40 CFR 264.1200]

The requirements of this paragraph apply to owners or operators who store munitions and explosive hazardous wastes, except as subparagraph (1)(b) of this Rule provides otherwise.

(NOTE: Depending on explosive hazards, hazardous waste munitions and explosives may also be managed in other types of storage units, including containment buildings (paragraph (33) of this Rule), tanks (paragraph (10) of this Rule), or containers (paragraph (9) of this Rule); see Rule 1200-1-11-.09(13)(f) for storage of waste military munitions.)

(b) Design and Operating Standards [40 CFR 264.1201]

1. Hazardous waste munitions and explosives storage units must be designed and operated with containment systems, controls, and monitoring that:
 - (i) Minimize the potential for detonation or other means of release of hazardous waste, hazardous constituents, hazardous decomposition products, or contaminated run-off to the soil, ground water, surface water, and atmosphere;
 - (ii) Provide a primary barrier, which may be a container (including a shell) or tank, designed to contain the hazardous waste;
 - (iii) For wastes stored outdoors, provide that the waste and containers will not be in standing precipitation;
 - (iv) For liquid wastes, provide a secondary containment system that assures that any released liquids are contained and promptly detected and removed from the waste area or vapor detection system that assures that any released liquids or vapors are promptly detected and an appropriate response taken (e.g., additional containment, such as overpacking, or removal from the waste area); and

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- (v) Provide monitoring and inspection procedures that assure the controls and containment systems are working as designed and that releases that may adversely impact human health or the environment are not escaping from the unit.
- 2. Hazardous waste munitions and explosives stored under this paragraph may be stored in one of the following:
 - (i) Earth-covered magazines. Earth-covered magazines must be:
 - (I) Constructed of waterproofed, reinforced concrete or structural steel arches, with steel doors that are kept closed when not being accessed;
 - (II) Designed and constructed:
 - I. To be of sufficient strength and thickness to support the weight of any explosives or munitions stored and any equipment used in the unit;
 - II. To provide working space for personnel and equipment in the unit; and
 - III. To withstand movement activities that occur in the unit; and
 - (III) Located and designed, with walls and earthen covers that direct an explosion in the unit in a safe direction, so as to minimize the propagation of an explosion to adjacent units and to minimize other effects of any explosion.
 - (ii) Above-ground magazines. Above-ground magazines must be located and designed so as to minimize the propagation of an explosion to adjacent units and to minimize other effects of any explosion.
 - (iii) Outdoor or open storage areas. Outdoor or open storage areas must be located and designed so as to minimize the propagation of an explosion to adjacent units and to minimize other effects of any explosion.
- 3. Hazardous waste munitions and explosives must be stored in accordance with a Standard Operating Procedure specifying procedures to ensure safety, security, and environmental protection. If these procedures serve the same purpose as the security and inspection requirements of subparagraph (2)(e) of this Rule, the preparedness and prevention procedures of paragraph (3) of this Rule, and the contingency plan and emergency procedures requirements of paragraph (4) of this Rule, then these procedures will be used to fulfill those requirements.
- 4. Hazardous waste munitions and explosives must be packaged to ensure safety in handling and storage.
- 5. Hazardous waste munitions and explosives must be inventoried at least annually.
- 6. Hazardous waste munitions and explosives and their storage units must be inspected and monitored as necessary to ensure explosives safety and to ensure that there is no migration of contaminants out of the unit.

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(c) Closure and Post-closure Care [40 CFR 264.1202]

1. At closure of a magazine or unit which stored hazardous waste under this paragraph, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and manage them as hazardous waste unless Rule 1200-1-11-.02(1)(c)4 applies. The closure plan, closure activities, cost estimates for closure, and financial responsibility for magazines or units must meet all of the requirements specified in paragraph (7) and (8) of this Rule, except that the owner or operator may defer closure of the unit as long as it remains in service as a munitions or explosives magazine or storage unit.
2. If, after removing or decontaminating all residues and making all reasonable efforts to effect removal or decontamination of contaminated components, subsoils, structures, and equipment as required in part 1 of this subparagraph, the owner or operator finds that not all contaminated subsoils can be practicably removed or decontaminated, he or she must close the facility and perform post-closure care in accordance with the closure and post-closure requirements that apply to landfills (subparagraph (14)(k) of this Rule).

(35)-(56) (RESERVED)

(57) Appendices to Rule 1200-1-11-.06 [40 CFR 264 Appendices]

Appendix I -- Recordkeeping Instructions

The recordkeeping provisions of subparagraph (5)(d) of this Rule specify that an owner or operator must keep a written operating record at his facility. This appendix provides additional instructions for keeping portions of the operating record. See part (5)(d)2 for additional recordkeeping requirements.

The following information must be recorded, as it becomes available, and maintained in the operating record until closure of the facility in the following manner:

Records of each hazardous waste received, treated, stored, or disposed of at the facility which include the following:

1. A description by its common name and the Hazardous Waste Code(s) from Rule 1200-1-11-.02 which apply to the waste. The waste description also must include the waste's physical form, i.e., liquid, sludge, solid, or contained gas. If the waste is not listed in Rule 1200-1-11-.02(4), the description also must include the process that produced it (for example, solid filter cake from production of ----, Hazardous Waste Code W051).

Each hazardous waste listed in Rule 1200-1-11-.02(4), and each hazardous waste characteristic defined in rule 1200-1-11-.02(3), has a four-digit Hazardous Waste Code assigned to it. This number must be used for recordkeeping and reporting purposes. Where a hazardous waste contains more than one listed hazardous waste, or where more than one hazardous waste characteristic applies to the waste, the waste description must include all applicable Hazardous Waste Codes.

2. The estimated or manifest-reported weight, or volume and density, where applicable, in one of the units of measure specified in Table 1;

Table 1

Unit of Measure	Code ¹
Gallons.....	G
Gallons per Hour	E
Gallons per Day	U
Liters	L
Liters per Hour	H
Liters per Day	V
Short Tons per Hour	D
Metric Tons per Hour	W
Short Tons per Day	N
Metric Tons per Day	S
Pounds per Hour	J
Kilograms per Hour	R
Cubic Yards	Y
Cubic Meters	C
Acres.....	B
Acre-feet	A
Hectares	Q
Hectare-meter	F
Btu's per Hour	I

FOOTNOTE: ¹Single digit symbols are used here for data processing purposes.

3. The method(s) (by handling code(s) as specified in Table 2) and date(s) of treatment, storage, or disposal.

Table 2.-Handling Codes for Treatment, Storage and Disposal Methods

Enter the handling code(s) listed below that most closely represents the technique(s) used at the facility to treat, store or dispose of each quantity of hazardous waste received.

- (i) Storage
- S01 Container (barrel, drum, etc.)
 - S02 Tank
 - S03 Waste Pile
 - S04 Surface Impoundment
 - S05 Drip Pad

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- S06 Containment Building (Storage)
- S99 Other Storage (specify)
- (ii) Treatment
 - (I) Thermal Treatment
 - T06 Liquid injection incinerator
 - T07 Rotary kiln incinerator
 - T08 Fluidized bed incinerator
 - T09 Multiple hearth incinerator
 - T10 Infrared furnace incinerator
 - T11 Molten salt destructor
 - T12 Pyrolysis
 - T13 Wet Air oxidation
 - T14 Calcination
 - T15 Microwave discharge
 - T18 Other (specify)
 - (II) Chemical Treatment
 - T19 Absorption mound
 - T20 Absorption field
 - T21 Chemical fixation
 - T22 Chemical oxidation
 - T23 Chemical precipitation
 - T24 Chemical reduction
 - T25 Chlorination
 - T26 Chlorinolysis
 - T27 Cyanide destruction
 - T28 Degradation
 - T29 Detoxification
 - T30 Ion exchange
 - T31 Neutralization
 - T32 Ozonation
 - T33 Photolysis
 - T34 Other (specify)
 - (III) Physical Treatment
 - I. Separation of components

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T35 Centrifugation

T36 Clarification

T37 Coagulation

T38 Decanting

T39 Encapsulation

T40 Filtration

T41 Flocculation

T42 Flotation

T43 Foaming

T44 Sedimentation

T45 Thickening

T46 Ultrafiltration

T47 Other (specify)

II. Removal of Specific Components

T48 Absorption-molecular sieve

T49 Activated carbon

T50 Blending

T51 Catalysis

T52 Crystallization

T53 Dialysis

T54 Distillation

T55 Electrodialysis

T56 Electrolysis

T57 Evaporation

T58 High gradient magnetic separation

T59 Leaching

T60 Liquid ion exchange

T61 Liquid-liquid extraction

T62 Reverse osmosis

T63 Solvent recovery

T64 Stripping

T65 Sand filter

T66 Other (specify)

(IV) Biological Treatment

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Activated sludge

- T68 Aerobic lagoon
- T69 Aerobic tank
- T70 Anaerobic tank
- T71 Composting
- T72 Septic tank
- T73 Spray irrigation
- T74 Thickening filter
- T75 Trickling filter
- T76 Waste stabilization pond
- T77 Other (specify)
- T78 [Reserved]
- T79 [Reserved]

(V) Boilers and Industrial Furnaces

- T80 Boiler
- T81 Cement Kiln
- T82 Lime Kiln
- T83 Aggregate Kiln
- T84 Phosphate Kiln
- T85 Coke Oven
- T86 Blast Furnace
- T87 Smelting, Melting, or Refining Furnace
- T88 Titanium Dioxide Chloride Process Oxidation Reactor
- T89 Methane Reforming Furnace
- T90 Pulping Liquor Recovery Furnace
- T91 Combustion Device Used in the Recovery of Sulfur Values
From Spent Sulfuric Acid
- T92 Halogen Acid Furnaces
- T93 Other Industrial Furnaces Listed in 40 CFR 260.10 (specify)

(VI) Other Treatment

- T94 Containment Building (Treatment)

(iii) Disposal

- D79 Underground Injection
- D80 Landfill

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- D81 Land Treatment
- D82 Ocean Disposal
- D83 Surface Impoundment (to be closed as a landfill)
- D99 Other Disposal (specify)
- (iv) Miscellaneous (Subpart X)
 - X01 Open Burning/Open Detonation
 - X02 Mechanical Processing
 - X03 Thermal Unit
 - X04 Geologic Repository
 - X99 Other Subpart X (specify)

Appendices II -- III - (RESERVED)

Appendix IV -- Cochran's Approximation to the Behrens-Fisher Students' t-Test

Using all the available background data (n_b readings), calculate the background mean (X_b) and background variance (s_b^2). For the single monitoring well under investigation (n_m reading), calculate the monitoring mean (X_m) and monitoring variance (s_m^2).

For any set of data (X_1, X_2, \dots, X_n) the mean is calculated by:

$$\bar{X} = \frac{X_1 + X_2 + \dots + X_n}{n}$$

and the variance is calculated by:

$$s^2 = \frac{(X_1 - \bar{X})^2 + (X_2 - \bar{X})^2 + \dots + (X_n - \bar{X})^2}{n - 1}$$

where "n" denotes the number of observations in the set of data.

The t-test uses these data summary measures to calculate a t-statistic (t^*) and a comparison t-statistic (t_c). The t^* value is compared to the t_c value and a conclusion reached as to whether there has been a statistically significant change in any indicator parameter.

The t-statistic for all parameters except pH and similar monitoring parameters is:

$$t^* = \frac{X_m - \bar{X}_s}{\sqrt{\frac{s_m^2}{n_m} + \frac{s_b^2}{n_b}}}$$

If the value of this t-statistic is negative then there is no significant difference between the monitoring data and background data. It should be noted that significantly small negative values may be indicative of a failure of the assumption made for test validity or errors have been made in collecting the background data.

The t-statistic (t_c), against which t^* will be compared, necessitates finding t_b and t_m from standard (one-tailed) tables where,

t_b = t-tables with $(n_b - 1)$ degrees of freedom, at the 0.05 level of significance.

t_m = t-tables with $(n_m - 1)$ degrees of freedom, at the 0.05 level of significance.

Finally, the special weightings W_b and W_m are defined as:

$$W_b = \frac{s_b^2}{n_b} \text{ and } W_m = \frac{s_m^2}{n_m}$$

and so the comparison t-statistic is:

$$t_c = \frac{W_b t_b + W_m t_m}{W_b + W_m}$$

The t-statistic (t^*) is now compared with the comparison t-statistic (t_c) using the following decision-rule:

If t^* is equal to or larger than t_c , then conclude that there most likely has been a significant increase in this specific parameter.

If t^* is less than t_c , then conclude that most likely there has not been a change in this specific parameter.

The t-statistic for testing pH and similar monitoring parameters is constructed in the same manner as previously described except the negative sign (if any) is discarded and the caveat concerning the negative value is ignored. The standard (two-tailed) tables are used in the construction t_c for pH and similar monitoring parameters.

If t^* is equal to or larger than t_c , then conclude that there most likely has been a significant increase (if the initial t^* had been negative, this would imply a significant decrease). If t^* is less than t_c , then conclude that there most likely has been no change.

A further discussion of the test may be found in Statistical Methods (6th Edition, Section 4.14) by G. W. Snedecor and W. G. Cochran, or Principles and Procedures of Statistics (1st Edition, Section 5.8) by R. G. D. Steel and J. H. Torrie.

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Standard t-Tables 0.05 Level of Significance

Degrees of freedom	t-values (one-tail)	t-values (two-tail)
1	6.314	12.706
2	2.920	4.303
3	2.353	3.182
4	2.132	2.776
5	2.015	2.571
6	1.943	2.447
7	1.895	2.365
8	1.860	2.306
9	1.833	2.262
10	1.812	2.228
11	1.796	2.201
12	1.782	2.179
13	1.771	2.160
14	1.761	2.145
15	1.753	2.131
16	1.746	2.120
17	1.740	2.110
18	1.734	2.101
19	1.729	2.093
20	1.725	2.086
21	1.721	2.080
22	1.717	2.074
23	1.714	2.069
24	1.711	2.064
25	1.708	2.060
30	1.697	2.042
40	1.684	2.021

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Footnote: Adopted from Table III of "Statistical Tables for Biological, Agricultural, and Medical Research" (1947, R. A. Fisher and F. Yates).

Appendix V -- Examples of Potentially Incompatible Waste

Many hazardous wastes, when mixed with other waste or materials at a hazardous waste facility, can produce effects which are harmful to human health and the environment, such as (1) heat or pressure, (2) fire or explosion, (3) violent reaction, (4) toxic dusts, mists, fumes, or gases, or (5) flammable fumes or gases.

Below are examples of potentially incompatible wastes, waste components, and materials, along with the harmful consequences which result from mixing materials in one group with materials in another group. The list is intended as a guide to owners or operators of treatment, storage, and disposal facilities, and to enforcement and permit granting officials, to indicate the need for special precautions when managing these potentially incompatible waste materials or components.

This list is not intended to be exhaustive. An owner or operator must, as the regulations require, adequately analyze his wastes so that he can avoid creating uncontrolled substances or reactions of the type listed below, whether they are listed below or not.

It is possible for potentially incompatible wastes to be mixed in a way that precludes a reaction (e.g., adding acid to water rather than water to acid) or that neutralizes them (e.g., a strong acid mixed with a strong base), or that controls substances produced (e.g., by generating flammable gases in a closed tank equipped so that ignition cannot occur, and burning the gases in an incinerator).

In the lists below, the mixing of a Group A material with a Group B material may have the potential consequence as noted.

Group 1-A

Acetylene sludge
Alkaline caustic liquids
Alkaline cleaner
Alkaline corrosive liquids
Alkaline corrosive battery fluid
Caustic wastewater
Lime sludge and other corrosive alkalies
Lime wastewater
Lime and water
Spent caustic

Group 1-B

Acid sludge
Acid and water
Battery acid
Chemical cleaners
Electrolyte, acid
Etching acid liquid or solvent
Pickling liquor and other corrosive acids
Spent acid
Spent mixed acid
Spent sulfuric acid

Potential consequences: Heat generation; violent reaction.

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Group 2-A

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Aluminum
Beryllium
Calcium
Lithium
Magnesium
Potassium
Sodium
Zinc powder
Other reactive metals and metal hydrides

Group 2-B

Any waste in Group 1-A or 1-B

Potential consequences: Fire or explosion; generation of flammable hydrogen gas.

* * * * *

Group 3-A

Alcohols
Water

Group 3-B

Any concentrated waste in Groups 1-A or 1-B
Calcium
Lithium
Metal hydrides
Potassium
SO₂Cl₂, SOCl₂, PCl₃, CH₃SiCl₃
Other water-reactive waste

Potential consequences: Fire, explosion, or heat generation; generation of flammable or toxic gases.

* * * * *

Group 4-A

Alcohols
Aldehydes
Halogenated hydrocarbons
Nitrated hydrocarbons
Unsaturated hydrocarbons
Other reactive organic compounds and solvents

Group 4-B

Concentrated Group 1-A or 1-B wastes
Group 2-A wastes

Potential consequences: Fire, explosion, or violent reaction.

Group 5-A

Spent cyanide and sulfide solutions

Group 5-B

Group 1-B wastes

Potential consequences: Generation of toxic hydrogen cyanide or hydrogen sulfide gas.

* * * * *

Group 6-A

Chlorates
Chlorine
Chlorites
Chromic acid
Hypochlorites
Nitrates
Nitric acid, fuming
Perchlorates
Permanganates
Peroxides
Other strong oxidizers

Group 6-B

Acetic acid and other organic acids
Concentrated mineral acids
Group 2-A wastes
Group 4-A wastes
Other flammable and combustible wastes

Potential consequences: Fire, explosion, or violent reaction.

Source: "Law, Regulations, and Guidelines for Handling of Hazardous Waste." California Department of Health, February 1975.

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Appendix VI - (RESERVED)

Appendix VII -- Appendix VIII - (RESERVED)

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Appendix IX - Ground-Water Monitoring List

Ground-Water Monitoring List ¹				
Common Name ²	CAS RN ³	Chemical Abstracts Service Index Name ⁴	Suggested Methods ⁵	PQL (µg/L) ⁶
Acenaphthene	83-32-9	Acenaphthylene, 1,2-dihydro-	8100 8270	200 10
Acenaphthylene	208-96-8	Acenaphthylene	8100 8270	200 10
Acetone	67-64-1	2-Propanone	8240	100
Acetophenone	98-86-2	Ethanone, 1-phenyl-	8270	10
Acetonitrile; Methyl cyanide	75-05-8	Acetonitrile	8015	100
2-Acetyla- minofluorene; 2- AAF	53-96-3	Acetamide, N-9H-fluoren-2-yl-	8270	10
Acrolein	107-02-8	2-Propenal	8030 8240	5 5
Acrylonitrile	107-13-1	2-Propenenitrile	8030 8240	5 5
Aldrin	309-00-2	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro- 1,4,4a,5,8,8a-hexahydro-(1alpha,4alpha,4abeta,5alpha,8alpha,8abeta)-	8080 8270	0.05 10
Allyl chloride	107-05-1	1-Propene, 3-chloro-	8010 8240	5 100
4-Aminobi- phenyl	92-67-1	[1,1'-Biphenyl]-4-amine	8270	10
Aniline	62-53-3	Benzenamine	8270	10
Anthracene	120-12-7	Anthracene	8100 8270	200 10
Antimony	(Total)	Antimony	6010 7040 7041	300 2,000 30
Aramite	140-57-8	Sulfurous acid, 2-chloroethyl 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester	8270	10
Arsenic	(Total)	Arsenic	6010 7060 7061	500 10 20
Barium	(Total)	Barium	6010 7080	20 1,000

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Benzene	71-43-2	Benzene	8020	2
			8240	5
Benzo[a]anthracene; Benzantracene	56-55-3	Benz[a]anthracene	8100	200
			8270	10
Benzo[b]-fluoranthene	205-99-2	Benz[e]acephenanthrylene	8100	200
			8270	10
Benzo[k]-fluoranthene	207-08-9	Benzo[k]fluoranthene	8100	200
			8270	10
Benzo[ghi]perylene	191-24-2	Benzo[ghi]perylene	8100	200
			8270	10
Benzo[a]pyrene	50-32-8	Benzo[a]pyrene	8100	200
			8270	10
Benzyl alcohol	100-51-6	Benzenemethanol	8270	20
Beryllium	(Total)	Beryllium	6010	3
			7090	50
			7091	2
alpha-BHC	319-84-6	Cyclohexane, 1,2,3,4,5,6-hexachloro- (1alpha,-2alpha,3beta,4alpha,5beta,6beta)-	8080	0.05
			8250	10
beta-BHC	319-85-7	Cyclohexane, 1,2,3,4,5,6-hexachloro- (1alpha,2beta,3alpha,4beta,5alpha,6beta)-	8080	0.05
			8250	40
delta-BHC	319-86-8	Cyclohexane, 1,2,3,4,5,6-hexachloro- (1alpha,2alpha, 3alpha,4beta,5alpha,6beta)-	8080	0.1
			8250	30
gamma-BHC; Lindane	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro- (1alpha,2alpha,3beta,4alpha,5alpha,6beta)-	8080	0.05
			8250	10
Bis(2-chloroethoxy)methane	111-91-1	Ethane, 1,1'-[methylenebis (oxy)]bis[2-chloro-	8270	10
Bis(2-chloroethyl)ether	111-44-4	Ethane, 1,1'-oxybis[2-chloro-	8270	10
Bis(2-chloro-1-methylethyl) ether; 2,2'-Dichlorodiisopropyl ether	108-60-1	Propane, 2,2'-oxybis[1-chloro-	8010	100
			8270	10
Bis(2-ethylhexyl) phthalate	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl)ester	8060	20
			8270	10
Bromodichloromethane	75-27-4	Methane, bromodichloro-	8010	1
			8240	5
Bromoform; Tribromomethane	75-25-2	Methane, tribromo-	8010	2
			8240	5

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4-Bromophenyl phenyl ether	101-55-3	Benzene, 1-bromo-4-phenoxy-	8270	10
Butyl benzyl phthalate; Benzyl butyl phthalate	85-68-7	1,2-Benzenedicarboxylic acid, butyl phenylmethyl ester	8060 8270	5 10
Cadmium	(Total)	Cadmium	6010 7130 7131	40 50 1
Carbon disulfide	75-15-0	Carbon disulfide	8240	5
Carbon tetrachloride	56-23-5	Methane, tetrachloro-	8010 8240	1 5
Chlordane	57-74-9	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8- octachloro-2,3,3a,4,7,7a-hexahydro-	8080 8250	0.1 10
p-Chloroaniline	106-47-8	Benzenamine, 4-chloro-	8270	20
Chlorobenzene	108-90-7	Benzene, chloro-	8010 8020 8240	2 2 5
Chlorobenzilate	510-15-6	Benzenecetic acid, 4-chloro-alpha-(4- chlorophenyl)-alpha- hydroxy-, ethyl ester	8270	10
p-Chloro-m- cresol	59-50-7	Phenol, 4-chloro-3-methyl-	8040 8270	5 20
Chloroethane; Ethyl chloride	75-00-3	Ethane, chloro-	8010 8240	5 10
Chloroform	67-66-3	Methane, trichloro-	8010 8240	0.5 5
2-Chlorona- phthalene	91-58-7	Naphthalene, 2-chloro-	8120 8270	10 10
2-Chlorophenol	95-57-8	Phenol, 2-chloro-	8040 8270	5 10
4-Chlorophenyl phenyl ether	7005-72-3	Benzene, 1-chloro-4-phenoxy-	8270	10
Chloroprene	126-99-8	1,3-Butadiene, 2-chloro-	8010 8240	50 5
Chromium	(Total)	Chromium	6010 7190 7191	70 500 10
Chrysene	218-01-9	Chrysene	8100 8270	200 10
Cobalt	(Total)	Cobalt	6010 7200 7201	70 500 10

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Copper	(Total)	Copper	6010	60
			7210	200
m-Cresol	108-39-4	Phenol, 3-methyl-	8270	10
o-Cresol	95-48-7	Phenol, 2-methyl-	8270	10
p-Cresol	106-44-5	Phenol, 4-methyl-	8270	10
Cyanide	57-12-5	Cyanide	9010	40
2,4-D; 2,4-Dichloro-phenoxyacetic acid	94-75-7	Acetic acid, (2,4-dichlorophenoxy)-	8150	10
4,4'-DDD	72-54-8	Benzene 1,1'-(2,2-dichloroethylidene)bis[4-chloro-	8080	0.1
			8270	10
4,4'-DDE	72-55-9	Benzene, 1,1'-(dichloroethenylidene)bis[4-chloro-	8080	0.05
			8270	10
4,4'-DDT	50-29-3	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-	8080	0.1
			8270	10
Diallate	2303-16-4	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester	8270	10
Dibenz[a,h]-anthracene	53-70-3	Dibenz[a,h]anthracene	8100	200
			8270	10
Dibenzofuran	132-64-9	Dibenzofuran	8270	10
Dibromo-chloromethane; Chlorodibromomethane	124-48-1	Methane, dibromochloro-	8010	1
			8240	5
1,2-Dibro-mo-3-chloropropane; DBCP	96-12-8	Propane, 1,2-dibromo-3-chloro-	8010	100
			8240	5
			8270	10
1,2-Dibromo-ethane; Ethylene dibromide	106-93-4	Ethane, 1,2-dibromo-	8010	10
			8240	5
Di-n-butyl phthalate	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester	8060	5
			8270	10
o-Dichloro-benzene	95-50-1	Benzene, 1,2-dichloro-	8010	2
			8020	5
			8120	10
			8270	10
m-Dichloro-benzene	541-73-1	Benzene, 1,3-dichloro-	8010	5
			8020	5
			8120	10
			8270	10

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p-Dichloro- benzene	106-46-7	Benzene, 1,4-dichloro-	8010	2
			8020	5
			8120	15
			8270	10
3,3'-Di- chlorobenzidine	91-94-1	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-	8270	20
trans-1,4- Dichloro-2- butene	110-57-6	2-Butene, 1,4-dichloro-, (E)-	8240	5
Dichlorodi- fluoromethane	75-71-8	Methane, dichlorodifluoro-	8010	10
			8240	5
1,1-Dichloro- ethane	75-34-3	Ethane, 1,1-dichloro-	8010	1
			8240	5
1,2-Dichloro- ethane; Ethylene dichloride	107-06-2	Ethane, 1,2-dichloro-	8010	0.5
			8240	5
1,1-Dichloro- ethylene; Vinylidene chloride	75-35-4	Ethene, 1,1-dichloro-	8010	1
			8240	5
trans-1,2- Dichloroethylene	156-60-5	Ethene, 1,2-dichloro-, (E)-	8010	1
			8240	5
2,4-Dichloro- phenol	120-83-2	Phenol, 2,4-dichloro-	8040	5
			8270	10
2,6-Dichloro- phenol	87-65-0	Phenol, 2,6-dichloro-	8270	10
1,2-Dichloro- propane	78-87-5	Propane, 1,2-dichloro-	8010	0.5
			8240	5
cis-1,3-Di- chloropropene	10061-01-5	1-Propene, 1,3-dichloro-, (Z)-	8010	20
			8240	5
trans-1,3- Dichloropropene	10061-02-6	1-Propene, 1,3-dichloro-, (E)-	8010	5
			8240	5
Dieldrin	60-57-1	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,-7,7a- octahydro-, (1aalpha,2beta,2aalpha,3beta,6beta,6aalpha,7 beta,7aalpha)-	8080	0.05
			8270	10
Diethyl phthalate	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester	8060	5
			8270	10
O,O-Diethyl O-2- pyrazinyl phosphoro- thioate; Thionazin	297-97-2	Phosphorothioic acid, O,O-diethyl O- pyrazinyl ester	8270	10

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Dimethoate	60-51-5	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester	8270	10
p-(Dimethyl-amino)azo-benzene	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-	8270	10
7,12-Dimethyl-benz[a]anthracene	57-97-6	Benz[a]anthracene, 7,12-dimethyl-	8270	10
3,3'Dimethyl-benzidine	119-93-7	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-	8270	10
alpha, alpha-Dimethyl-phenethylamine	122-09-8	Benzeneethanamine, alpha,alpha-dimethyl-	8270	10
2,4-Dimethyl-phenol	105-67-9	Phenol, 2,4-dimethyl-	8040 8270	5 10
Dimethyl phthalate	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester	8060 8270	5 10
m-Dinitro-benzene	99-65-0	Benzene, 1,3-dinitro-	8270	10
4,6-Dinitro-o-cresol	534-52-1	Phenol, 2-methyl-4,6-dinitro-	8040 8270	150 50
2,4-Dinitro-phenol	51-28-5	Phenol, 2,4-dinitro-	8040 8270	150 50
2,4-Dinitro-toluene	121-14-2	Benzene, 1-methyl-2,4-dinitro-	8090 8270	0.2 10
2,6-Dinitro-toluene	606-20-2	Benzene, 2-methyl-1,3-dinitro-	8090 8270	0.1 10
Dinoseb; DNBP; 2-sec-Butyl-4,6-dinitrophenol	88-85-7	Phenol, 2-(1-methylpropyl)-4,6-dinitro-	8150 8270	1 10
Di-n-octyl phthalate	117-84-0	1,2-Benzenedicarboxylic acid, dioctyl ester	8060 8270	30 10
1,4-Dioxane	123-91-1	1,4-Dioxane	8015	150
Diphenylamine	122-39-4	Benzenamine, N-phenyl-	8270	10
Disulfoton	298-04-4	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl]ester	8140 8270	2 10
Endosulfan I	959-98-8	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide, (3alpha,5abeta,6alpha,9alpha,9abeta)-	8080 8250	0.1 10

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Endosulfan II	33213-65-9	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro- 1,5,5a,6,9,9a-hexahydro-, 3-oxide, (3alpha,5alpha,6beta,9beta,9alpha)-	8080	0.05
Endosulfan sulfate	1031-07-8	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro- 1,5,5a,6,9,9a-hexahydro-, 3,3-dioxide	8080 8270	0.5 10
Endrin	72-20-8	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro- 1a,2,2a,3,6,6a,-7,7a-octahydro-, (1alpha, 2beta,2abeta,3alpha,6alpha, 6abeta,7beta,7alpha)-	8080 8250	0.1 10
Endrin aldehyde	7421-93-4	1,2,4-Methenocyclopenta[cd]pentalene-5-carboxaldehyde, 2,2a,3,3,4,7-hexachlorodecahydro-, (1alpha,2beta,2abeta,4beta,4abeta,-5beta,6abeta,6bbeta,7R*)-	8080 8270	0.2 10
Ethylbenzene	100-41-4	Benzene, ethyl-	8020 8240	2 5
Ethyl methacrylate	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester	8015 8240 8270	10 5 10
Ethyl methanesulfonate	62-50-0	Methanesulfonic acid, ethyl ester	8270	10
Famphur	52-85-7	Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl]-O,O-dimethyl ester	8270	10
Fluoranthene	206-44-0	Fluoranthene	8100 8270	200 10
Fluorene	86-73-7	9H-Fluorene	8100 8270	200 10
Heptachlor	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-	8080 8270	0.05 10
Heptachlor epoxide	1024-57-3	2,5-Methano-2H-indeno[1,2-b]oxirene, 2,3,4,5,6,7,7-heptachloro- 1a,1b,5,5a,-6,6a,-hexahydro-, (1alpha,1bbeta, 2alpha,5alpha,5abeta,6beta,6alpha)	8080 8270	1 10
Hexachloro-benzene	118-74-1	Benzene, hexachloro-	8120 8270	0.5 10
Hexachloro-butadiene	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	8120 8270	5 10
Hexachloro-cyclopentadiene	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	8120 8270	5 10

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Hexachloro-ethane	67-72-1	Ethane, hexachloro-	8120 8270	0.5 10
Hexachloro-phene	70-30-4	Phenol, 2,2'-methylenebis[3,4,6-trichloro-	8270	10
Hexachloro-propene	1888-71-7	1-Propene, 1,1,2,3,3,3-hexachloro-	8270	10
2-Hexanone	591-78-6	2-Hexanone	8240	50
Indeno(1,2,3-cd)pyrene	193-39-5	Indeno[1,2,3-cd]pyrene	8100 8270	200 10
Isobutyl alcohol	78-83-1	1-Propanol, 2-methyl-	8015	50
Isodrin	465-73-6	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a hexahydro-(1alpha,4alpha,4abeta,5beta, 8beta,8abeta)-	8270	10
Isophorone	78-59-1	2-Cyclohexen-1-one, 3,5,5-trimethyl-	8090 8270	60 10
Isosafrole	120-58-1	1,3-Benzodioxole, 5-(1-propenyl)-	8270	10
Kepone	143-50-0	1,3,4-Metheno-2H-cyclobuta- [cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachloro-octahydro-	8270	10
Lead	(Total)	Lead	6010 7420 7421	40 1,000 10
Mercury	(Total)	Mercury	7470	2
Methacrylon-itrile	126-98-7	2-Propenenitrile, 2-methyl-	8015 8240	5 5
Methapyrilene	91-80-5	1,2,Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'- (2-thienylmethyl)-	8270	10
Methoxychlor	72-43-5	Benzene, 1,1'-(2,2,2,trichloroethylidene)bis [4-methoxy-	8080 8270	2 10
Methyl bromide; Bromomethane	74-83-9	Methane, bromo-	8010 8240	20 10
Methyl chloride; Chloromethane	74-87-3	Methane, chloro-	8010 8240	1 10
3-Methyl-cholanthrene	56-49-5	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-	8270	10
Methylene bromide; Dibromo-methane	74-95-3	Methane, dibromo-	8010 8240	15 5

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Methylene chloride; Dichloro-methane	75-09-2	Methane, dichloro-	8010 8240	5 5
Methyl ethyl ketone; MEK	78-93-3	2-Butanone	8015 8240	10 100
Methyl iodide; Iodomethane	74-88-4	Methane, iodo-	8010 8240	40 5
Methyl methacrylate	80-62-6	2-Propenoic acid, 2-methyl-, methyl ester	8015 8240	2 5
Methyl methanesul-fonate	66-27-3	Methanesulfonic acid, methyl ester	8270	10
2-Methyl-naphthalene	91-57-6	Naphthalene, 2-methyl-	8270	10
Methyl parathion; Parathion methyl	298-00-0	Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester	8140 8270	0.5 10
4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1	2-Pentanone, 4-methyl-	8015 8240	5 50
Naphthalene	91-20-3	Naphthalene	8100 8270	200 10
1,4-Naphtho-quinone	130-15-4	1,4-Naphthalenedione	8270	10
1-Naphthyla-mine	134-32-7	1-Naphthalenamine	8270	10
2-Naphthyla-mine	91-59-8	2-Naphthalenamine	8270	10
Nickel	(Total)	Nickel	6010 7520	50 400
o-Nitroaniline	88-74-4	Benzenamine, 2-nitro-	8270	50
m-Nitroaniline	99-09-2	Benzenamine, 3-nitro-	8270	50
p-Nitroaniline	100-01-6	Benzenamine, 4-nitro-	8270	50
Nitrobenzene	98-95-3	Benzene, nitro-	8090 8270	40 10
o-Nitrophenol	88-75-5	Phenol, 2-nitro-	8040 8270	5 10
p-Nitrophenol	100-02-7	Phenol, 4-nitro-	8040 8270	10 50
4-Nitroquin-oline-1-oxide	56-57-5	Quinoline, 4-nitro-, 1-oxide	8270	10

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N-Nitrosodi-n-butylamine	924-16-3	1-Butanamine, N-butyl-N-nitroso-	8270	10
N-Nitrosodi-ethylamine	55-18-5	Ethanamine, N-ethyl-N-nitroso-	8270	10
N-Nitrosodi-methylamine	62-75-9	Methanamine, N-methyl-N-nitroso-	8270	10
N-Nitrosodi-phenylamine	86-30-6	Benzenamine, N-nitroso-N-phenyl-	8270	10
N-Nitrosodi-propylamine; Di-n-propyl-nitrosamine	621-64-7	1-Propanamine, N-nitroso-N-propyl-	8270	10
N-Nitroso-methylethylamine	10595-95-6	Ethanamine, N-methyl-N-nitroso-	8270	10
N-Nitroso-morpholine	59-89-2	Morpholine, 4-nitroso-	8270	10
N-Nitrosopi-peridine	100-75-4	Piperidine, 1-nitroso-	8270	10
N-Nitroso-pyrrolidine	930-55-2	Pyrrolidine, 1-nitroso-	8270	10
5-Nitro-o-toluidine	99-55-8	Benzenamine, 2-methyl-5-nitro-	8270	10
Parathion	56-38-2	Phosphorothioic acid, O,O-diethyl-O-(4-nitrophenyl) ester	8270	10
Polychlorinated biphenyls; PCBs	See Note 7	1,1'-Biphenyl, chloro derivatives	8080 8250	50 100
Polychlorinated dibenzo-p-dioxins; PCDDs	See Note 8	Dibenzo[b,e][1,4]dioxin, chloro derivatives	8280	0.01
Polychlorinated dibenzofurans; PCDFs	See Note 9	Dibenzofuran, chloro derivatives	8280	0.01
Pentachloro-benzene	608-93-5	Benzene, pentachloro-	8270	10
Pentachloro-ethane	76-01-7	Ethane, pentachloro-	8240 8270	5 10
Pentachloro-nitrobenzene	82-68-8	Benzene, pentachloronitro-	8270	10
Pentachloro-phenol	87-86-5	Phenol, pentachloro-	8040 8270	5 50
Phenacetin	62-44-2	Acetamide, N-(4-ethoxyphenyl)	8270	10

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Phenanthrene	85-01-8	Phenanthrene	8100 8270	200 10
Phenol	108-95-2	Phenol	8040 8270	1 10
p-Phenylene-diamine	106-50-3	1,4-Benzenediamine	8270	10
Phorate	298-02-2	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester	8140 8270	2 10
2-Picoline	109-06-8	Pyridine, 2-methyl-	8240 8270	5 10
Pronamide	23950-58-5	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-pro-pynyl)-	8270	10
Propionitrile; Ethyl cyanide	107-12-0	Propanenitrile	8015 8240	60 5
Pyrene	129-00-0	Pyrene	8100 8270	200 10
Pyridine	110-86-1	Pyridine	8240 8270	5 10
Safrole	94-59-7	1,3-Benzodioxole, 5-(2-propenyl)-	8270	10
Selenium	(Total)	Selenium	6010 7740 7741	750 20 20
Silver	(Total)	Silver	6010 7760	70 100
Silvex; 2,4,5-TP	93-72-1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-	8150	2
Styrene	100-42-5	Benzene, ethenyl-	8020 8240	1 5
Sulfide	18496-25-8	Sulfide	9030	10,000
2,4,5-T; 2,4,5-Tri-chlorophenoxyacetic acid	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	8150	2
2,3,7,8-TCDD; 2,3,7,8-T-Tetrachlorodibenzo-p-dioxin	1746-01-6	Dibenzo[b,e][1,4]dioxin, 2,3,7,8-tetrachloro-	8280	0.005
1,2,4,5-Tetrachlorobenzene	95-94-3	Benzene, 1,2,4,5-tetrachloro-	8270	10
1,1,1,2-Tetrachloroethane	630-20-6	Ethane, 1,1,1,2-tetrachloro-	8010 8240	5 5

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1,1,2,2-Tetrachloroethane	79-34-5	Ethane, 1,1,2,2-tetrachloro-	8010 8240	0.5 5
Tetrachloroethylene; Perchloroethylene; Tetrachloroethene	127-18-4	Ethene, tetrachloro-	8010 8240	0.5 5
2,3,4,6-Tetrachlorophenol	58-90-2	Phenol, 2,3,4,6-tetrachloro-	8270	10
Tetraethyl dithiopyrophosphate; Sulfotepp	3689-24-5	Thiodiphosphoric acid $[(HO)_2P(S)]_2O$, tetraethyl ester	8270	10
Thallium	(Total)	Thallium	6010 7840 7841	400 1,000 10
Tin	(Total)	Tin	7870	8,000
Toluene	108-88-3	Benzene, methyl-	8020 8240	2 5
o-Toluidine	95-53-4	Benzenamine, 2-methyl-	8270	10
Toxaphene	8001-35-2	Toxaphene	8080 8250	2 10
1,2,4-Trichlorobenzene	120-82-1	Benzene, 1,2,4-trichloro-	8270	10
1,1,1-Tri-chloroethane; Methylchloroform	71-55-6	Ethane, 1,1,1-trichloro-	8240	5
1,1,2-Tri-chloroethane	79-00-5	Ethane, 1,1,2-trichloro-	8010 8240	0.2 5
Trichloroethylene; Trichloroethene	79-01-6	Ethene, trichloro-	8010 8240	1 5
Trichloro-fluoromethane	75-69-4	Methane, trichlorofluoro-	8010 8240	10 5
2,4,5-Tri-chlorophenol	95-95-4	Phenol, 2,4,5-trichloro-	8270	10
2,4,6-Tri-chlorophenol	88-06-2	Phenol, 2,4,6-trichloro-	8040 8270	5 10
1,2,3-Tri-chloropropane	96-18-4	Propane, 1,2,3-trichloro-	8010 8240	10 5

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O,O,O-Tri-ethyl phosphorothioate	126-68-1	Phosphorothioic acid, O,O,O-triethyl ester	8270	10
sym-Trinitro-benzene	99-35-4	Benzene, 1,3,5-trinitro-	8270	10
Vanadium	(Total)	Vanadium	6010 7910 7911	80 2,000 40
Vinyl acetate	108-05-4	Acetic acid, ethenyl ester	8240	5
Vinyl chloride	75-01-4	Ethene, chloro-	8010 8240	2 10
Xylene (total)	1330-20-7	Benzene, dimethyl-	8020 8240	5 5
Zinc	(Total)	Zinc	6010 7950	20 50

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FOOTNOTE: ¹The regulatory requirements pertain only to the list of substances; the right hand columns (Methods and PQL) are given for informational purposes only. See also footnotes 5 and 6.

FOOTNOTE: ²Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

FOOTNOTE: ³Chemical Abstracts Service registry number. Where "Total" is entered, all species in the ground water that contain this element are included.

FOOTNOTE: ⁴CAS index names are those used in the 9th Cumulative Index.

FOOTNOTE: ⁵Suggested Methods refer to analytical procedure numbers used in the EPA publication, SW-846 "Test Methods for Evaluating Solid Waste", Third Edition. Analytical details can be found in SW-846 and in documentation on file at the Agency. The packed column gas chromatography methods 8010, 8020, 8030, 8040, 8060, 8080, 8090, 8110, 8120, 8140, 8150, 8240, and 8250 were promulgated methods through Update IIB of SW-846 and, as of Update III, the Agency has replaced these methods with "capillary column GC methods", as the suggested methods.

FOOTNOTE: ⁶Practical Quantitation Limits (PQLs) are the lowest concentrations of analytes in ground waters that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQLs listed are generally stated to one significant figure. CAUTION: The PQL values in many cases are based only on a general estimate for the method and not on a determination for individual compounds; PQLs are not a part of the regulation.

FOOTNOTE: ⁷Polychlorinated biphenyls (CAS RN 1336-36-3); this category contains congener chemicals, including constituents of Aroclor-1016 (CAS RN 12674-11-2), Aroclor-1221 (CAS RN 11104-28-2), Aroclor-1232 (CAS RN 11141-16-5), Aroclor-1242 (CAS RN 53469-21-9), Aroclor-1248 (CAS RN 12672-29-6), Aroclor-1254 (CAS RN 11097-69-1), and Aroclor-1260 (CAS RN 11096-82-5). The PQL shown is an average value for PCB congeners.

FOOTNOTE: ⁸This category contains congener chemicals, including tetrachlorodibenzo-p-dioxins (see also 2,3,7,8-TCDD), pentachlorodibenzo-p-dioxins, and hexachlorodibenzo-p-dioxins. The PQL shown is an average value for PCDD congeners.

FOOTNOTE: ⁹This category contains congener chemicals, including tetrachlorodibenzofurans, pentachlorodibenzofurans, and hexachlorodibenzofurans. The PQL shown is an average value for PCDF congeners.

Authority: T.C.A. §§4-5-202 and 68-212-101 et seq. Administrative History: Original rule filed January 16, 1981; effective March 2, 1981. Amendment filed November 29, 1984; effective December 29, 1984. Amendment filed January 3, 1986; effective February 2, 1986. Amendment filed November 20, 1987; effective January 4, 1988.

Amendment filed October 12, 1989; effective November 26, 1989. Amendment filed March 5, 1991; effective April 19, 1991. Amendment filed December 31, 1992; effective February 14, 1992. Amendment filed March 19, 1993 effective May 3, 1993. Amendment filed November 30, 1993; effective February 13, 1994. Amendment filed June 5, 1995; effective August 19, 1995. Amendment filed January 29, 1997; effective April 14, 1997. Amendment filed August 28, 1997; effective November 11, 1997. Amendment filed June 29, 1998; effective September 12, 1998. Amendment filed December 21, 1998; effective March 6, 1999. Amendment filed May 7, 1999; effective July 19, 1999. Amendment filed September 14, 2000; effective November 28, 2000. Amendment filed August 3, 2001; effective October 17, 2001. Amendment filed May 8, 2002; effective July 22, 2002. Amendment filed October 29, 2003; effective January 12, 2004. Amendment filed June 23, 2004 effective September 6, 2004.

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